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FORTY-FIFTH YEAR

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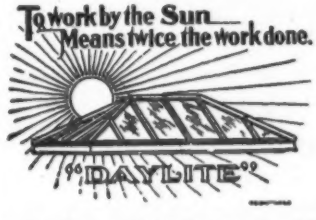

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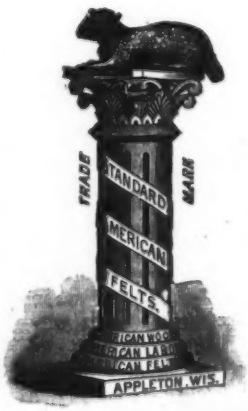

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THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY

FORTY-FIFTH YEAR

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AMERICAN CHEMISTS AND PAPER MEN MEET

The American Chemical Society, the American Electrochemical Society and the Technical Association of the Paper and Pulp Industry Convened This Week in Conjunction with the Second National Exposition of Chemical Industries—A Resumé of the Proceedings—List of Papers Presented by Committees of Technical Association.

A warm welcome was extended to visiting members of the American Chemical Society at the first general meeting of the society which was held on Monday morning in Horace Mann Auditorium, Columbia University. J. Merritt Matthews, president of the New York section of the society, presided and promised the hearty support of his division throughout the meeting. Only those who have followed the chemists throughout the week in their various sessions realize how faithfully this spirit of co-operation has been exercised. Not only has

ARTHUR B. DANIELS,
President American Paper and Pulp Association.

the New York section co-operated with the rest of the American Chemical Society, but it has also done everything possible to bring the chemists of the country and the members of the Technical Association of the Pulp and Paper industry closer together.

Mr. Matthews in his speech of welcome said that, in his opinion, this was a most important and auspicious meeting, for it was dedicated to the discussion of problems that go beyond mere academic science and touch the heart of American industrial development. He hoped that the meeting would demonstrate to the country at large that the American chemist was ready and willing to devote his efforts to the public welfare. The meeting of the three societies, namely, the American Chemical Society, the American Electrochemical Society, and the Technical Association of the Paper and Pulp Industry, in conjunction with the Second National Exposition of Chemical Industries, is significant of the present position of chemistry and, he thought, would have far reaching results. All followers of the paper and pulp industry for the past five years realize the vast influence that the application of the science of chemistry has had upon this industry alone. The entire week was not taken up by business meetings, however. The chemists also are firm believers in the social life.

Reception by American Chemical Society

On Tuesday evening the members of the Technical Association of the Paper and Pulp Industry and the members of the Electro Chemical Society were the guests of the American Chemical Society at a reception given in the Hotel Astor. The reception was held in the Grand Ballroom of the hotel, and there were 450 people present. The fact that members of the paper industry were the guests of the Chemical Society has special significance at this time. The paper industry is now very closely bound up with the science of chemistry. Scientific methods and the introduction of the knowledge of chemistry have aided materially the paper industry during the past few years. Such "get-togethers" as the one that was held at the Astor can only help to strengthen the bond of friendship and good feeling which already has grown to exist between the two industries.

The representative of the PAPER TRADE JOURNAL was received by Dr. Charles H. Herty, President of the American Chemical Society, and by other members of the reception committee of the society. The ladies were ably entertained by the reception committee of the ladies division of the American Chemical Society. There were about 100 ladies present, and while the large ballroom was by no means crowded, nevertheless a pleasant collection of co-workers and friends was gathered together for an enjoyable evening. Dancing was held from 9.30 until midnight, with an hour intermission for supper. Gradually the tired chemists, paper men and other guests dwindled in number, and the great ballroom was left empty, but prepared for the same societies to reconvene at the smoker of the Electro-Chemical Society, which was held on Thursday evening of this week.

Subscription Dinner

On Friday evening a subscription dinner was held in the Waldorf-Astoria Hotel to which the members of the American Electrochemical Society and the Technical Association of the Paper and Pulp Industry were invited. Among the numerous and well-known speakers was A. D. Little.

The dinner was well attended and enjoyed by all. It will be long remembered as one more outward and visible sign of the tie that binds the members of the chemical societies and the members of the paper and pulp industry—good fellowship linked with science.

American Electrochemical Society

On Wednesday the opening meeting of the American Electrochemical Society was held. A large number of members have exhibits in the Exposition and many are also members of the American Chemical Society. They represent the development of chemical industries through the application of water power, which is principally centered in the Niagara Falls district, but is likewise found to lesser degree in the Western States. The full program included papers by various prominent men in electrochemical circles.

Technical Association of Pulp and Paper Industry

The opening meeting of the Technical Association of the Paper and Pulp Industry was held in Schermerhorn Hall on Thursday morning. Henry E. Fletcher, chairman of the association, called the meeting to order at 10:45 and presided. Dr. Hesse, of the American Chemical Society, spoke a few words of welcome and told the members of the association that the American chemist would be glad to meet them more than half way in solving their problems of manufacture and supply.

The report of the secretary and treasurer showed that, at the present time, the association numbers 254 members, of whom 48 have been added since the meeting which was held in May in Kalamazoo.

Discussion of the papers presented by the various committees was postponed until later in the session. By postponing the discussion more papers were read and the regular business of the meeting was facilitated. Among the many and

HENRY E. FLETCHER,
President, Technical Association of the Paper and Pulp Industry.

MARTIN L. GRIFFIN,
Chairman, Committee on Soda Fibre.

W. G. MAC NAUGHTON,
Vice-President, Technical Association of the Paper and Pulp Industry.

interesting papers which were read on Thursday and Friday are the following, which are found in this issue of the PAPER TRADE JOURNAL on the pages indicated:

Papers at Technical Association Meeting

Report of Committee on Soda Fibre..... 8C
Some Reactions of Rosin Sizing Solutions..... 9A
Automatic Pressure Regulator for Pulp Grinders..... 9C
Cellulose Fibres and Their Reaction to Dyes.....10A
Factors in the Retention of Filler.....10B
Report of Committee on Standard Methods of Testing Materials Used in Making of Paper.....10C
Some Suggestions About the Purchase of Pulpwood.....10E
Guesses About Supply of Wood.....12

Those Who Were Present

Those who were present at the meeting of the Technical Association of the Paper and Pulp Industry:

J. N. Stephenson, University of Maine, Arono, Me.
H. W. French, H. S. Kimball, engineer, Boston, Mass.
Martin S. Griffin, Oxford Paper Company, Rumford, Me.
Herbert S. Kimball, mill architect, Boston.
M. Bell, New England Manufacturing Company, North Woburn, Mass.
C. B. Thorne, Riordan Pulp & Paper Company, Hawkesbury, Ont.
W. V. Dickerson, Muskegon Extract Company, Muskegon, Mich.
E. Refsaas, The Falls Manufacturing Company, Oeonto Falls, Wis.
S. Wang, Riordan Pulp & Paper Company, Hawkesbury, Ont.
Robert B. Wolf, Burgess Sulphite Fibre Company, Berlin, N. H.
R. S. Hatch, Crocker McElwain Company, Holyoke, Mass.
P. DeC. Bray, Eastern Manufacturing Company, Bangor, Me.
Robt. B. Best, Process Engravers, Montreal.
C. L. Weirich, Mellon Inst. Ind. Res., Pittsburgh, Pa.
Reuben B. Robertson, Champion Fibre, Canton, N. C.
Lucien Buck, Eastman Kodak Company, Rochester, N. Y.
A. D. Conley, U. S. Bureau Standards, Washington.
F. A. Curtis, Aetna Paper Company, Dayton, Ohio.
F. C. Clark, U. S. Bureau of Standards, Washington.
R. W. Bowdoin, Eastern Manufacturing Company, Bangor, Me.
Henry J. Guild, Eastern Manufacturing Company, Bangor, Me.
Otto Kress, Forest Products Laboratory, Madison, Wis.
W. L. Nixon, Chemical Paper Manufacturing Company, Holyoke, Mass.
W. A. Whitney, Emerson Paper Company, Wendell, N. H.
W. G. MacNaughton, Nekoosa-Edwards Paper Company, Port Edwards, Wis.
H. E. Fletcher, Fletcher Paper Company, Alpena, Mich.
John D. Rue, department chemical engineering, University of Michigan, Ann Arbor, Mich.
J. L. Clark, Emerson Laboratory, Springfield, Mass.
E. Sustermeister, S. D. Warren & Co., Cumberland Mills, Mo.
O. P. Maxwell, West Virginia Pulp and Paper Company, Luke, Md.
O. P. Gephart, Miami Paper Company, West Carrollton, Ohio.

THE MANUFACTURE OF SODA FIBRE

The Soda Fibre Committee, Martin L. Griffin, Chairman, Reports on the Subject, Treating of the Making of Liquor, the Cooking of the Wood and the Recovery Process—Recommendations as to Reporting on Liquor Solutions, as to Method of Procedure in Treating Wood and as to Various Other Matters.

The report of the Soda Fibre Committee, of which Martin L. Griffin is chairman, and which was presented to the Technical Association of the Paper and Pulp Association at its meeting, is as follows:

LIQUOR MAKING

No exact, standard strength for the caustic liquor used in cooking by the soda process can be established for all mills, because local conditions such as type and size of digesters, method of circulating the liquor, pressure and dryness of steam, condition of wood used, etc., necessitate corresponding adjustments in the liquor strength.

The commonly used strength for poplar wood is from 80 to 100 grams per litre of actual caustic soda.

It is the belief of your committee that the strength of the caustic liquor produced by the first boiling in the causticizing process should be somewhat higher than the strength of the cooking liquor used. The chief advantage of this is that when mixed with the subsequent boilings it gives a liquor of the desired strength for cooking. It also permits of adjustment in either direction instead of in only one, as is the case when the first boiling is of the regular cooking strength, and thus if a sudden change in the character of the wood demands a stronger liquor it is at once available without undue delay or derangement of the process.

The excess in strength over that of the cooking liquor should not be too high since the lower the concentration the higher will be the causticity and the better the sludge will settle.

Your committee believes that the reporting of all forms of alkali as equivalent sodium carbonate is at times very confusing or even misleading and that a better way would be to give the grams per litre both of the active constituent and of the total alkali expressed as carbonate. All tests of cooking liquors would then be reported as grams per litre of actual caustic soda and grams per litre of total alkali as carbonate. The Beaume test, as applied to cooking liquors, is of much less value than the determination of the grams per litre of alkali and no great reliance should be placed upon it.

The liquor employed for cooking is almost universally prepared by causticizing soda ash or recovered ash by means of caustic lime. The losses which necessarily occur in the cooking, washing and recovery processes are best made up by the introduction of fresh soda ash in the causticizing plant.

The usual apparatus for causticizing is a large wrought iron tank fitted with either a vertical or horizontal mechanical agitator and a perforated basket near the top for holding the lime.

There are several methods of operation to choose from; one is to run in the hot soda ash liquor, throw the lime directly into the causticizing tank and boil all up together. Another method, when the basket or cage is used, is to fill the tank with liquor so that the bottom of the basket is just covered, bring it to a boil and then throw in the lime very gradually. More liquor and lime are then added till the correct charge is completed, when the boiling is finished.

The time of boiling has considerable influence on the causticity obtained, as the latter is known to increase with the time of boiling. The size of the plant in relation to the necessary output frequently limits the length of boil, but it should be possible to continue for at least an hour.

The factor which has the greatest influence on the causticity of the resulting liquor is the strength of the solution treated. The stronger the solution the lower the causticity obtained, as is proved by the following results of experiments by Lunge:

Before causticizing		After causticizing
Per cent. Na2 Co3	Sp. gr.	Per cent. Causticity.
2	1.022 at 15° C	99.4
5	1.052 at 15° C	99.0
10	1.107 at 15° C	97.2
14	1.150 at 15° C	94.5
20	1.215 at 30° C	90.7

The separation of the sludge from the caustic liquor may be performed by settling or by mechanical filtration. If settling is resorted to the first settling is generally made in the causticizing tank and the subsequent settlings in the wash tanks. If the floor space available is too much to permit the installation of the necessary number of tanks the separation of the sludge may be by means of filter press. This requires more attention than the settling tanks and a more intelligent class of labor.

The Dorr Cyanide Machinery Company has recently proposed a continuous process for causticizing and separating the sludge. This process looks reasonable, but so far as we know it has never been tried out on a practical scale.

The weak liquors produced in the washing of the sludge are used in part to dilute the first boiling to the desired strength for cooking and in part instead of water in some of the early boils.

The loss of alkali in the lime sludge is unavoidable, but it should be kept as low as possible. With good work the soda lost should be well below 1 per cent. of the weight of the lime mud and the lime lost should not be over ¼ per cent.

The utilization of lime sludge by burning in kilns for the reproduction of lime is a problem which has been worked on for a number of years. It is claimed that several such installations are now operating successfully, but your committee has no first hand knowledge of the result of their work.

The tests necessary in the causticizing plant are those on lime, the various solutions produced and the lime sludge.

A satisfactory test for the lime is a miniature causticizing test. A representative sample of the lime is crushed and quartered down and a weighed amount is boiled with a weighed quantity of dry soda ash. The amount of the latter is in excess of that which the lime can causticize and the boiling is continued one hour. The amount of water is so adjusted that the final strength of the solution is about that used in practice. After the boiling the solution is allowed to settle and the clear liquor titrated with $\frac{N}{I}$ acid, using first phenolphthalein and finally methyl orange. Knowing the causticity from this titration and the weight of soda ash taken, it is easy to calculate the pounds of lime required to causticize 100 pounds of dry soda ash by the following formula:

$$\frac{\text{Weight lime used} \times 100}{\text{Weight soda ash} \times \text{per cent. causticity}}$$

This test gives a basis for adjusting the amount of lime to employ and it should be made on every carload of lime before any of it is used.

The actual causticizing operations should be controlled by determinations of the grams per litre of caustic soda and sodium

carbonate and the percentage causticity. This should be done in each boiling to which fresh chemicals are added in the last boiling. The titration is the same as that described above. It is desirable to maintain as high a causticity as possible, but that which can be obtained depends on the strength of the solution which is produced and this again is dependent on the working conditions of the mill in question. In general it may be said that the stronger the solution the lower the percentage causticity obtained. Obviously the mere statement of the causticity obtained will not show whether one plant is doing better work than another, and in order to form an intelligent opinion all working conditions must be taken into account.

In order to see that the loss of lime and alkali is as small as possible the lime mud or sludge after the final washing should be tested for both free lime and soluble alkali. Titration with standard acid, using phenolphthalein as an indicator, will show the free lime and half the soda present. To determine the soluble alkali a weighed sample of the dry lime mud is moistened with a strong ammonium carbonate solution, evaporated to dryness and heated over a low flame till no odor of ammonia can be noticed. The mud is then leached with boiling water till the soluble alkali is all removed and the total leachings are then titrated with standard acid using methyl orange as indicator. From these two tests it may be ascertained whether lime is being wasted and whether the washing of mud has been carried far enough. These tests need not be applied to every boiling, but should be made occasionally.

THE COOKING OF THE WOOD

For many years this process has been confined to the cooking of poplar and similar species of wood, because these woods have been abundant easy to reduce and bleach, have yielded well, and have had no other important market. A process for cooking poplar could almost be standardized for general practice; still more variables in the wood, as moisture, and in the equipment of the plant will call for specific treatment to accomplish the most efficient results.

If we include the reduction of a wide variety of woods of different species, and fibrous matter from plant growth, as has now become common, no definite details can be laid down as to treatment. However, certain fundamental principles and methods of procedure can be laid down as guides to efficient results. The growth of plants is a progressive process from sap to heart wood or maturity of the plant, and hence different stages in the growth will vary in resistance to any reducing treatment.

The chemical reactions of the process consist in a combination between the alkali and the more reactive portions of the wood, which, under the influence of temperature and pressure breaks down with the formation of soluble products, and leaves the cellulose in the form of clean fiber. This reaction with caustic soda is one of hydrolysis, in which the woody molecule is gradually broken down, with the formation of acid products, combining with the alkali.

The most efficient process will attempt to furnish only sufficient alkali and such treatment as will disintegrate the wood and leave the fiber intact. Excessive quantities of caustic and prolonged and drastic treatment will finally destroy the fiber completely. A lack of knowledge and appreciation of this fact has been the principal cause for lower yields and shorter fiber.

It is also a well established fact that any treatment of wood, which permits of any degree of oxidation, will entail a loss of fiber, and conversely, any means to prevent oxidation will increase the product of pure fiber.

It is necessary therefore, in order to bring into solution only the lignified tissues of the wood, to use just sufficient alkali for this purpose. This is almost entirely neutralized by the acid products of decomposition, leaving as little free alkali as possible to attack the fiber which should be nearly pure cellulose.

There are difficulties in the way of accomplishing this desired end point, which would depend upon the saturation of the wood with the alkali before any drastic treatment begins. Here is where the fine work in the process must be done.

The Elements to Be Considered

The elements to be considered are:

First, the preparation of the wood chips. They should be cut as nearly as possible to the same length, and sized as uniformly as possible. They should be cut as short as possible consistent with the preservation of the length of the ultimate fiber, the smallest waste in sawdust, and the cost of plant and labor. A length of three-fourths to seven-eighths of an inch complies with these conditions according to present experience.

Second, the moisture in the wood. Soft porous woods will contain moisture about as follows:

Air dry wood	30 to 35 per cent. moisture
Green wood	40 to 50 per cent. moisture
Water soaked wood	50 to 60 per cent. moisture

Third, the character and composition of the wood itself. All peeled wood consists of sap and heart woods of different composition and functions, the former growing to the latter. This of itself constitutes an essential element of difference which cannot be corrected. The function of the primary or sap wood is to build by the complex process of growth, the secondary or heart wood. Technically it is of relatively small consequence in comparison.

The principal function of the secondary or heart wood is to give mechanical support to the tree, to afford means for the ascent of the sap from roots to foliage and alternately to store up and give back products of assimilation.

It is a patent fact that different species perform these functions differently, and that the same species may be so influenced by environment as to dominate some one in particular.

Of these three elements, size of chips, moisture, and composition of the wood, this last is by far the most important to be taken into account in reducing wood to pulp.

In every proposition to reduce a fibrous material to paper making pulp, the first thing to determine is the quantity and quality it will yield. Second, the cost for treatment, and third, possible by products.

A comparison of three different kinds of woods now being reduced to paper pulp will illustrate forcibly the difference in the composition of woods and the selective treatment required. I refer to Poplar, Chestnut and Southern Pine. The first illustrates a wood with a high content of cellulose and small proportion of encrusting matter; the second contains about 7 to 8 per cent of tannin, and the third a high content of pitch and resins.

The use of chestnut calls for the extraction of the tannin before pulping. This operation results in the delivery of a water saturated chip for the pulping process.

The use of Southern Pine waste and light wood calls for the extraction of turpentine and rosin before pulping. Within the limits of these illustrations are included other woods where a selective treatment adapted to the wood should be used to obtain the best results. It follows therefore that only woods of very similar characteristics should be cooked together, and only wood of a single class cooked in a single mill.

Method of Procedure Recommended

While your committee is unable to lay down a standard method of cooking soda pulp, it is able to lay down a method of procedure which it can recommend.

First, an analysis of the wood to be used, showing the possible yield and quality in pure fiber and by-products, if any are possible.

Second, experimental cooks on a small scale to determine the approximate amount of alkali required and the approximate yield under mill conditions as far as possible.

With this information in hand we may proceed to the mill process.

First, the preparation of uniform chips.

Second, the cooking caustic soda solution.

The rule is that the strength of the caustic solution shall be such that the total alkali, when contained in its possible and necessary volume, will be sufficient to reduce the reactive elements of the wood, leaving but a small excess. To ascertain this required strength and volume, the permissible volume must be determined by taking the volume capacity of the digester, computing the solid volume of the wood, the amount of contained moisture, and air space in both wood and voids when the digester is filled. From this total air space about 20 per cent must be deducted as a safe margin for condensation of the heating steam. The remaining space may be occupied by the liquor.

Having determined approximately the amount of alkali required per unit volume of the wood, the total alkali required for each digester cook is easily found.

Liquors are therefore made of such a strength that the necessary quantity of alkali is furnished in the required volume. For easily reducible woods the strength will be between 80 and 100 grams equivalent sodium carbonate per litre, and the volume will be approximately one-half the capacity of the digester. These figures apply to the process when live steam is admitted directly into the digester. Indirect methods of heating have now gone into disuse. A helpful guide to the required amount of alkali for cooking is the proximate determination of the free alkali remaining in the black liquor at the end of the operation. In order to obtain a well cooked, easy bleaching pulp the black liquors must contain about 10 per cent of the original furnish as free alkali.

The Circulation

A vigorous circulation of the liquor through the mass, particularly during the early part of the cook, is very important. The common practice is to use an injector, placed in the bottom of the digester beneath a false bottom and lead the liquor to the top, where it is sprayed over the chips. Care should be taken to relieve air and accumulated gases from the copy at frequent intervals.

The Steam Pressure

There is no good reason for varying the steam pressure in cooking the ordinary woods. The chief function of the steam is to furnish the activating heat and pressure for the penetration of the alkali. To this end a digester of about 100 lbs. has come to be common practice and is recommended.

Duration of the Cooking

This should be ascertained by experience and should be made as short as possible. Not only the quality of the wood but the size of the digesters are important factors. When this period has been determined it should be rigidly adhered to, because prolonged action at high temperature is very destructive of the fiber. No other factor in the process has such an important bearing on the quality and yield of the fiber. For poplar wood six hours approximately is sufficient.

It follows, therefore, that when the essential features of the process have been determined for a particular plant as we have outlined, the control of the process will consist, first, in maintaining regularity in all details as far as possible. The greatest stress should be placed on this. Second, where there are elements of irregularity beyond control and of material importance the process may be adjusted, temporarily, to meet the conditions. Great variations in the wood and excessive moisture are perhaps the only features calling for adjustment. Third, the process itself should cover adequately all ordinary variations in all details. Small adjustments for details are not practically possible. Fourth, the control of the process will consist in a careful supervision of the mechanical and chemical features of the process, including sampling tests of the wood, the liquors, and the pulp product at frequent intervals.

THE RECOVERY PROCESS

In the process of washing soda pulp after blowing from digesters many elements must be taken into account. From the pulp side of the problem the washing should be done with warm water as quickly and thoroughly as possible. From the recovery side the concentration of the liquor to be recovered must be as high as possible, consistent with expeditious work. The shortest limit of washing pulp, regardless of recovery, would be to use water only and perform the work in shallow tanks. The limit of sustaining concentration and least volume would be to press out the liquor as soon as the pulp is blown off. Next to this might be the leaching out of the spent liquor in a continuous battery of cells. Neither of these limits is practical. Due regard therefore must be had to both elements of the process.

The pulp must be washed expeditiously, the concentration of the liquor must be kept up and the consequent volume for evaporation as low as possible.

To accomplish this certain fundamental principles should be observed. Black liquor of digester strength should be used to aid in the transfer of pulp before washing begins, whenever such aid is necessary, as is sometimes required in blowing off digesters or transferring from blow tanks to washing tanks.

The washing should begin with weak liquor of a strength of about 1½° Be at about 150° F. All tanks should drain to evaporator tanks till liquor falls to about 3° Be, when the drainage should be turned into weak liquor storage tanks. When there are several tanks in process in rotation the liquors to evaporator and weak liquor storage will average up to a fairly constant strength. With one weak liquor it is possible to maintain a strength of 4° to 4½° Be at 150° F. and run no weak liquors to waste. Hydrometers reading from 0° to 10° Be graduated in tenths, and a paper scale thermometer are the only instruments required for testing the liquors.

Evaporation of the Black Liquor

Any approved vacuum system of three or four bodies adapted to work on foamy liquors should give good results. A report of the evaporating plant should be kept, and for economical control the installation should be laid out so that hourly records can be kept, showing the density of the entering and evaporated liquors, their volumes, the pressure and rate of usage of the steam required, etc.

Accurate meters can now be had for measuring the steam. From these records efficiency data may be made available promptly. The work of the evaporator should be the fundamental basis in the recovery process, and the method of washing the stock should be conducted with this in view.

It is not apropos to ask "at what strength of black liquor does evaporation cease to be profitable?"

It is easily possible to recover all the liquor from the washing of the pulp profitably, except unavoidable leakage, by paying due regard to the method of washing. The problem is: how profitable may the process become? This can easily be determined at all times by adopting the above method of control.

The liquor for the furnaces should test about 35° Be as it leaves the evaporator. An approximate analysis of the black liquors entering and leaving the evaporator should be made from time to time, including the determination of the solids and water, the organic matter and alkali. These results would be useful in checking the efficiencies of both the furnaces and evaporators.

The Incinerating Furnaces

All furnaces are now set in connection with a steam boiler, and should be so arranged that measurements of liquor burned and

black ash produced; coal burned and steam produced can be determined easily. The efficiency of this part of the plant is dependent upon the team work of these three departments—stock washing, evaporation and furnaces.

The Leaching System

There are two systems for leaching black ash in common use, the open and closed tank system. In the former the ash is leached by gravity by a systematic handling of the weak liquors with pumps; in the latter the tanks are closed and connected with battery style. A single pump forces water into the weak end of the system and increases in strength till it leaves the other end of the battery. Both of these systems are in common use. In either case the resulting liquor may be had of the required strength for causticizing. Tests for the efficiency of leaching should be made on the last waters coming from the tanks. This is most accurately done by titration, showing the results in grams per litre of sodum carbonate.

Method of Computing Recovery

It makes no difference at what stage, in the cycle of the alkali, the recovery is computed. Inasmuch as the losses are generally made up by the use of commercial soda ash, it is a common practice to compute the recovery on the basis of the ash contained in the black ash. The sum of the pure alkali, as sodium carbonate, contained in the black ash, plus the new ash used, divided into the amount recovered, will give the percentage recovered. By this method a slight error appears equivalent to the amount of alkali lost in leaching out the black ash, as this step is necessary to fully complete the cycle. If the finished liquor at the digesters is made the point for this computation there will be no error in the work. In this case the alkali in the finished liquor made, divided into the new ash used, give the percentages of new ash, and hence the actual recovery.

It is best to keep all computation and records of alkali in the form of sodium carbonate. When, however, the alkali actually exists as sodium hydrate, the additional equivalent may be noted.

SOME REACTIONS OF ROSIN SIZING SOLUTIONS

The Chemical and Physical Changes That Take Place—Confusion in Terminology—The Results of Some Investigators' Work—The Free Rosin Solutions—Conclusions Submitted as a Satisfactory Explanation of Phenomena in Sizing Paper—A Detailed Statement of Them.

By J. A. DE CEW

It is quite to be expected that in any class of chemical reactions which occur under such varying conditions as those existing during the precipitation of rosin size in paper mill practice, there will be among the various investigators a certain amount of disagreement regarding the theoretical explanation of what actually takes place. There is also some confusion resulting from the terminology which is commonly used in describing sodium resinate compounds existing in rosin size, as, for example, in the use of the phrase "free rosin." The purpose of the following remarks is not to recapitulate the work of other investigators, nor to criticize their conclusions, but to submit a short discussion of the effect upon the chemical reactions involved, of the various physical conditions under which the material may be used.

It is a well known fact that a rosin soap will easily dissolve an equivalent amount of rosin to that which has been saponified and this extra rosin, whether in solution in the size wax, or whether in suspension in diluted solution, is still called "free rosin" in the terminology of the trade. In order, however, to distinguish between the various states in which the rosin might exist, it should be divided into three classes, consisting first, of dissolved rosin, second, colloidal rosin, and third, rosin in suspension. The reason for this is that before the rosin soap can be used in the art of papermaking it must first be brought into dilute aqueous solution.

If the soap should be readily soluble, then dilution may take place in cold water and consequently the diluting can be carried out within the beater itself. On the other hand, if the rosin soap is not readily soluble in cold water, owing to the fact that it contains a considerable quantity of dissolved rosin, it is necessary to bring it into a sufficiently dilute condition so that no further material separation of rosin will take place when it comes in contact with the paper stock. Obviously the difficulty of carrying out this operation increases in proportion with the amount of extra rosin which is held in solution in the rosin soap.

Authorities disagree as to whether abietic acid is monobasic or dibasic and it cannot be stated definitely whether rosin which is in complete solution in a rosin soap is there in the form of an acid resinate, or whether it is merely dissolved rosin. It seems to the writer that a fairly intelligible conception is obtained by assuming that a sodium resinate containing rosin in solution is in fact an acid resinate of the alkali metal and that from this solution insoluble acid resinates of the heavy metals can be produced.

Some interesting data on this subject is recorded by E. O. Ellingson in a paper before the American Chemical Society in 1914, the subject being "Abietic Acid and Some of its Salts." In this investigation he shows clearly that certain insoluble acid abietates were formed when a dilute aqueous solution of sodium abietate was added in small proportion to a dilute solution of a metallic salt.

The salts of chromium, manganese, nickel, iron cadmium, cobalt, strontium, and copper, all gave precipitates carrying an excess of abietic acid. The one exception was the salt of aluminum, which under exactly the same conditions produced a basic aluminum abietate. From this it is proven that a neutral sodium resinate solution, when poured into a dilute solution of sulphate of alumina, will always produce a precipitate of basic aluminum resinate.

On the other hand, the investigations of Naugebauer show that a neutral resinate, when precipitated with a considerable excess of sulphate of alumina, will produce an acid precipitate containing approximately 33 per cent of rosin excess, and with the maximum amount of alum the rosin acid in the precipitate does not exceed 41 per cent.

If we can accept the results of this investigator then it is evident that insoluble acid resinates containing a limited amount of rosin acids can be produced from a neutral sodium resinate by precipitation with even an aluminum salt.

The results produced with sulphate of alumina, therefore, will depend entirely upon the mass action of the materials, chemical equilibrium being established in accordance with the relative amount and acidity of the alum used. In short, if 100 grammes of rosin in the form of a neutral resinate is precipitated with approximately 33 grammes of alum, we will have as a result, a basic alum resinate. If, on the other hand, it is precipitated with 330 grammes of alum, we would have an acid resinate of alumina containing approximately 40 per cent of rosin acid. With less alum excess the amount of rosin acid in the precipitate will be proportionately less.

If the basic aluminum resinate were a satisfactory water repellant then the problem of paper sizing would be a very simple one, and all that would be necessary in practice would be to use the size and alum in proper chemical equivalents. All experience shows, however, that when using a neutral resinate for sizing, it is necessary to use a large alum excess in order to obtain a sufficiently water-repellant condition in the paper. The inference is that the insoluble acid resinates are essentially the agents which impart to the paper that resistance to aqueous penetration called "sizing."

Remington and his associates insist that resinate of alumina only is formed when a neutral sodium resinate is precipitated with alum, even if the alum is used in excess, but that it is decomposed by extraction with alcohol and that this fact leads others to believe that a portion of the rosin is uncombined. These investigators publish the results of fifty tests for sizing paper, from which they draw their conclusions, but it would seem that their methods of making the tests were quite inefficient, inasmuch as they used not less than 5 per cent of rosin, and as high as 12 per cent without always getting sizing results. Now, in mill practice, a very poor size should give results with 3 per cent of rosin, while an efficient size should produce a very hard sized paper with an equivalent amount. It would seem unwise to form any fixed conclusions from tests which gave such unsatisfactory results.

Other investigators such as Emil Heuser and Naugebauer and also Otto Kress and Struthers have demonstrated by exhaustive tests that rosin acids are liberated from a neutral resinate when alum is used in excess and that the amount of these rosin acids may be from 33 per cent to 41 per cent of the total rosin, depending upon the alum excess used.

If an acid resinate of alumina containing 40 parts of rosin acids can be produced from 100 parts of neutral resinate of soda and 330 parts of sulphate of alumina, then 20 parts of alum will be required to produce the same results from an acid resinate of soda, containing 40 per cent of rosin acids, or with 200 parts of alum one can produce from this an aluminum resinate with 64 per cent of rosin acid.

These highly acid resinates are found to be very colloidal in character and have great capacity for distribution within the paper pulp. They also show considerable resistance to dehydration and are thus able to retain their plastic character while the paper is being dried.

It has been demonstrated in paper mill tests that the rosin acids alone that are thrown out of solution from a rosin soap by means of acid, can also produce sizing results, providing that the rosin acids precipitated have a similar colloidal character to the aluminum precipitated. The practical difficulty, however, of obtaining colloidal precipitates when using acid makes this practice a very uncertain one for it would be only under very favorable circumstances that this practice could be carried out with success. The same difficulty is experienced when other metallic salts—e. g., the salts of iron or calcium—are used to replace the aluminum sulphate, for the precipitates from these are much more dense and granular than those derived from aluminum.

It would seem therefore that the real necessity for the use of sulphate of alumina for precipitating the rosin is not so much the necessity for forming acid aluminum resinates, but the fact that the rosin precipitated in this way has a more colloidal character than that thrown out of solution by other coagulants, and consequently will have greater covering power and efficiency as a water repellant. This explanation is opposed to the theory that rosin acids in the form of emulsions or suspensions are efficient sizing agents, for it is obvious that visible floating rosin has lost its colloidal character and its covering power.

The fact is that the so-called free rosin emulsions, when properly made, contain but a very small amount of rosin acid in the emulsified form, practically all of it remaining in solution in the diluted soap. The art of preparing good rosin size emulsions (using the term as generally understood) is therefore the ability to dilute a solution of rosin acids, without the actual liberation of rosin in the emulsified form. The difficulty in doing this will explain the erratic results obtained by Remington and other investigators when endeavoring to determine the effect of rosin size containing dissolved rosin.

The laboratory difficulties involved are shown by an article by Otto Kress and R. T. Struthers. Their results show that from a rosin saponified with 15 per cent of sodium carbonate, over 98 per cent was obtained by them in hot dilute aqueous solution, and that from a rosin saponified with 10 per cent of sodium carbonate, only 50.6 per cent was brought into actual solution in hot water. It is quite possible, however, to dilute such a rosin soap, holding in solution about 45 per cent of rosin acids, to an aqueous solution of 2 per cent solids, without having any of the rosin become insoluble. In this condition all of the rosin acids can enter into chemical reactions with other solutions and will precipitate from solution in a very bulky colloidal mass.

Between the extreme of physical condition just described, there are a great number of intermediate stages. The rosin acids may be partly liberated by dilution in the form of small visible floating particles and coarse granular masses and a part may be in a state of colloidal solution. It is safe to say that all rosin particles which are sufficiently coarse to be classed as suspensions, have lost the greater part of their sizing value. That portion of the rosin acids which is in colloidal solution is still effective for sizing purposes because it has the property of becoming fixed upon the fibers by adsorption. This action can only take place, however, when the paper stock is free from such electrolytes as may discharge the colloid before it reaches the fiber. Dilute acid resinate solutions may contain variable proportions of dissolved acid resinates, colloidal rosin, and rosin suspensions, and the relative proportions of these is what determines the basis of its waterproofing possibilities. Assuming that the sizing value of these solutions varies directly with the amount of rosin acids that are in true and colloidal solution, we have a measure of efficiency which checks very closely with actual mill results.

The maximum amount of rosin acids that can be held in stable solution in a diluted rosin soap of from 1 per cent to 2 per cent. total solids, is about 50 per cent of the total rosin content. In such a solution there is always a slight tendency towards hydrolysis, which increases with the amount of dilution, but the fact that these solutions when once prepared can be then boiled without decomposition shows that the solutions are fairly stabilized and also that there can be very little rosin then present in the colloidal form.

The conclusions which it is desired to submit as offering a satisfactory explanation of practically all the phenomena in connection with sizing paper with rosin are as follows:

(1) That the rosin acids which are precipitated from dilute solution by means of a coagulant which will deposit the rosin in a colloidal mass, is the material which when properly incorporated into the paper stock and dried therein produces the water resistant characteristic known as sizing.

(2) That the results obtained from a given quantity of material are largely dependent upon the character of the rosin colloid and its treatment during the process of manufacturing the paper.

(3) This product can be obtained in limited quantity from a neutral resinate by the use of a large excess of alum, or it may be obtained in large proportions from an acid resinate and a relatively less excess of alum. The maximum obtained from a neutral resinate is about 40 per cent of the total rosin, and from an acid resinate about 70 per cent of the total rosin, when a sulphate of alumina containing no free acid is used.

AUTOMATIC PRESSURE REGULATOR FOR GRINDERS

Edward T. Moore, of Syracuse, N. Y., Presents a Paper in Which He Discusses Grinder Regulation, Points Out Its Main Requirements, and Sets Forth the Merits of an Automatic Regulator—Can Be Installed in a Mill Without Interfering With Production—His Address as Presented to the Technical Association of the Pulp and Paper Industry.

Wood is converted into pulp suitable for the manufacture of paper by methods which produce two distinct varieties. The first is mechanical wood pulp, so called because it is made by using a grindstone to tear the fibres from the wood, a purely mechanical process. The second is termed chemical wood pulp, from the fact that the material is submitted to chemical treatment.

In this paper, we are concerned only with the manufacture of pulp by the grinding process, and since you are all very familiar with this operation, the details of pulp grinding have not been described.

In our investigations upon this subject, extending over a period of years, we have found that the methods involved in this process are not conducted according to any fixed standards of practice. Each superintendent or manager has his own theories about the method of grinding, and, as a result, scarcely any two mills operate under the same conditions, even when grinding the same species and turning out similar products.

For example, one mill producing newspaper has 135 H. P. applied to each grinder; the pressure computed to the basis of a 14-inch cylinder is 17.5 pounds per square inch, and the peripheral speed of the stone is 2,660 feet per minute. In another mill with the same size installation and making the same class of paper, each grinder has 625 H. P. applied to it, uses a pressure of 72 pounds on a 14-inch cylinder, and a peripheral speed of 3,540 feet per minute. A variation of from 135 H. P. to 625 H. P. to the grinders is seen in the example cited.

Reports of power consumption per ton of pulp in 24 hours show a range of from 45 to 150 H. P. In view of the extreme variation in the conditions of manufacturing mechanical pulp, it is no doubt true that some mills are operating under conditions of very low efficiency. From a number of experiments, it has been determined that the strength of paper varies as the amount of power expended per ton of pulp varies, and that under the present methods of manufacturing mechanical pulp the utilization of a considerable amount of power is necessary to obtain a strong paper. It has been noted, however, that paper increases in both tensile and bursting strength with the power consumption only up to a certain value; above this value the strength will decrease.

A Factor of Great Importance

A factor of great importance, it would appear, in commercial manufacture is the power consumption per ton, per meter, of breaking length of paper; or, as it might also be expressed, the power consumption per ton, per point, per pound test. From our experiments, by dividing values of power by the corresponding values of strength, results are obtained which indicate that for each horsepower expended in the manufacture of pulp at medium power consumption a greater degree of strength is obtained in the resultant paper than for a horsepower expended under conditions when the power is either too low or too high per ton. This fact suggests that maximum efficiency in the production of a mixed ground wood and sulphite paper of a given strength requires the proper adjustment of both the power consumption of the grinder and the percentage of sulphite in the mixture. For instance, it might be desirable to use a small amount of power per ton of pulp and a relatively high proportion of sulphite, rather than a higher power consumption and lower proportion of sulphite. The proper adjustment would depend, of course, on the relative value of ground wood produced by high and lower power and sulphite fibre.

Since the advent of the electrically driven grinder, many attempts have been made to control the pressure in the cylinders of the grinders so that nearly constant full load would be carried by the motor. This is desirable, of course, from an electrical standpoint because, by holding constant full load on an electric motor, advantage is taken of its higher operating efficiency. Furthermore, it will be readily appreciated that, by maintaining conditions at their full load value, the output of ground wood will be very much increased over a condition where the load falls below normal.

Earliest Form of Regulation

The earliest form of regulation consisted of belting the pressure pump to the shaft of the grinder, so that when the grinder increased its speed the pump would do likewise and deliver a greater pressure in the cylinder, thereby reducing the speed of the revolving grindstone. This method is, of course, very sluggish in operation and allows the stone to race for a few seconds when a pocket is released until the pump increases its speed to meet the pressure demand. A non-uniform grade of pulp is thereby produced. This system would also be useless on an electrically driven grinder, since the motor speed is practically constant.

A form of regulation better adapted to electrical installations consisted of a throttle operated by the grinder man who, between his duties of filling the pockets with wood, was supposed to watch an indicating meter and adjust the pressure according to the load as shown by the meter. This method, however, had its shortcomings, for a heavy load would always seem to appear when the grinder man was otherwise occupied.

Other Systems of Regulation

Other systems of regulation have been tried, among which is a solenoid connected to the throttle valve so fluctuations of load on the motor would actuate the solenoid and raise or lower the valve stem. It was found that regulation was not very close and fluctuations in the water system would occur with such rapidity as to cause a pumping action and inability to control the load with any degree of reliability or accuracy. This would cause excessive peaks and high power bills, particularly where power is purchased from a power company.

Where central station service is used, the automatic pressure regulator for pulpwood grinders about to be described occupies a unique position in the equipment of a paper or pulp mill, due to the fact that, in its operation, it is an active agency in automatically maintaining the service rendered by the power company at a higher degree of uniformity and satisfaction than can be accomplished through almost any other medium, in addition to decreasing the cost of power to the paper company and increasing the ground wood production.

In the manufacture of mechanical wood pulp, a large amount

of power is required for reducing the logs of wood to the final form, and since this operation usually requires about 75 per cent. of the total load of the mill, a good opportunity occurs at this point to effect economies in the use of power and to increase the production.

While conditions in various mills will vary, it has been found that in all installations to date the increased production of ground wood has been from 12 to 22 per cent. In one mill purchasing power, the electric bills have been reduced $170 per month on a 600 H. P. motor driving two three-pocket grinders. In another mill which generates its power, it was found that the fluctuating grinder load produced such disturbances in the penstock line, due to rapid operation of the waterwheel governors, as to totally prevent proper regulation of the generators. In one instance, the penstock surges were so great as to burst a strain plate in the pipe line.

Another installation having its paper mill located some distance from the pulp mill has a pipe line extending between the two for carrying the pulp and a number of screens suitably placed at one end of the pipe line to facilitate the removal of splinters and coarse fibre. It was customary to clean out these screens on an average of twice a week, but since the regulator has been operating, it has not been found necessary to do this oftener than once a month.

The following distinctive features of the regulator will be found desirable of attainment in any mill and the number applicable to any one installation will depend upon the particular conditions which obtain:

Distinctive Features

1. Prevents peak load charges.
2. Prevents overload on motors.
3. Eliminates underloads so motors may operate at practically 100 per cent. load factor.
4. Increase the production of ground wood.
5. Improves the quality and uniformity of the pulp.
6. Reduces the amount of splinters or shives.
7. Reduces the amount of short fibre which is carried away in the white water.
8. Reduces the maximum demand horsepower where power is purchased and allows, when desirable, all motors to be operated at the exact value of the generator capacity where a mill has its own plant.
9. Improves the service rendered by the power company by maintaining constant load and better power factor and voltage regulation.
10. In installations involving several grinders, the number of grinder operators can be reduced, as supervision over the load taken by the grinders is not required.
11. Increases materially the electrical performance of the motors and transformers by maintaining them at their full load efficiency.
12. Prevents shut downs on account of overloads and consequent loss of production.
13. Is absolutely "fool proof" and cannot be interfered with by the grinder operators.
14. The regulator can be adjusted to control the grinder load only or the entire mill load.
15. Small amount of power required to operate the regulator—less than ⅛ H. P.
16. Although the grinder operators have to handle considerably more wood, due to the increased production, yet the elimination of responsibility for peak loads and the relaxation from constant attention usually required has been welcomed by the men in charge of grinders.
17. The regulator allows the power station to figure on the exact maximum demand of a paper mill, and where several mills are on one line, the sum of the individual maximum demands will be the exact capacity necessary to be furnished, no extra allowance being necessary to take care of overloads.
18. The regulator is easily adjustable for load setting in case the demands of the power station or mill vary.

The installation of the regulator does not involve changes in the present system of piping, and pumps used in mills can be used without any extensive alterations, a positive pressure or centrifugal type of pump acting equally well.

How Regulation Is Obtained

Regulation is obtained by automatically varying the water pressure in the cylinders of the grinders so as to obtain constant load upon the motor driving same. Variations in load take place when the pressure is taken from a cylinder preparatory to charging a pocket and again when the pressure is reapplied; also during grinding, since less power is required when the circumference of a log is in contact with the stone than when a greater area of contact is presented when a log is partially ground away.

All the above variations produce a fluctuating load and resultant loss in production, as is obvious by an inspection of the curves taken from a graphic meter chart.

It is seen that without the regulator, as the area of wood in contact with the stone varies, the power taken by the motor varies, since constant pressure is usually maintained in the cylinders of the grinder. In other words, there is constant pressure in the cylinders, but not constant unit pressure on the wood, since its area is varying continually. In order, therefore, to obtain constant pressure per square inch of wood, it is necessary to vary the cylinder pressure a few pounds from normal to secure this, and also to maintain constant load on the motor.

Since pressure per square inch and power variations can be kept constant by controlling and varying the normal water pressure by a few pounds, it has also been desirable to provide means whereby these slight pressure changes are brought about gradually so as to prevent the formation of splinters and shives, as now occurs when the wood is brought in contact with the stone after pressure is applied to a pocket. As a result of this and the constant unit pressure, not only an increased production is secured, but a more uniform grade of pulp is obtained.

Determination of Most Suitable Regulation

The system of regulation most suitable for a particular application is determined largely by the operating conditions which obtain and the class of product manufactured. No two mills having all conditions the same, that which would be suitable for one would be wholly inadequate for another. The proper installation to be made in a given case, however, can readily be determined by a casual inspection.

In carrying out the installation of the regulator, a series or current transformer of suitable ratio is placed in circuit with the motor driving the grinders and connected so that fluctuations of load will cause the moving element of the primary regulating relay to respond therewith. This moving element operates either up or down depending upon whether the load is above or below the predetermined value, said value being obtained by balancing the movable arm equally between the contacts by a screw adjustment when the indicating meter registers the desired load. As the primary regulating relay element moves upward or downward beyond a certain adjustable distance, a set of contacts is closed, causing a secondary relay or magnet switch to operate, thereby energizing one of the solenoids of an hydraulic regulator valve. Instantly, the core of the solenoid is raised to its extreme position, opening both ports, which were previously closed, thereby admitting

hydraulic pressure to the upper end of the cylinder through the other pilot valve port. The piston in the cylinder is thereby forced downward, opening to a larger extent the balanced regulating valve. This permits an increase in pressure in the grinder cylinders, thus increasing the load on the motor driving the grinders.

As soon as the electric load has reached the point for which the primary relay is set, the primary circuit will be broken, causing the secondary relay to break the secondary circuit and the core of the solenoid immediately drops, forcing the pilot valve pistons to the lower position, which closes both ports, thereby preventing the admission or escape of water from the hydraulic cylinder, and consequently locking the piston of the hydraulic cylinder in the exact position which it occupied when the pilot valve closed. This is usually in some mid-position between one end or the other of the cylinder. The piston in the balanced regulating valve controlling the admission of water to the grinder cylinders will, of course, occupy a corresponding position to that of the piston in the hydraulic cylinder, which would be partly open.

When the Load Is Constant

Now as long as the load remains constant, a state of equilibrium will exist in the system; but if the load should increase above the point for which the primary regulating relay is set, contact would be made in that direction, causing the other switch of the secondary relay to close its secondary circuit, energizing the other solenoid, and opening the other pilot valve. The opening of this pilot valve opens both of its ports, admitting hydraulic pressure to the lower end of the hydraulic cylinder through one of its ports and exhausting water from the upper end of the cylinder through its other port.

The piston in the cylinder will then be forced upward and the balanced regulating valve piston correspondingly raised, thereby shutting off some of the pressure applied to the grinder pockets and reducing the load on the grinder motor. As in the first instance, when the load reaches the valve for which the primary regulating relay is set, the circuits will be opened, the pilot valve returned to its normal position at the lower end of its stroke, closing both ports and locking the piston hydraulically in some mid position of its stroke at whatever point it happened to be when the correct load value is reached.

The primary regulating relay can be adjusted for any degree of load by simply raising or lowering a screw, so that in localities where the power company changes the available demand from day to day, it will be found very easy to make the desired adjustment and so prevent the occurrence of peak loads.

Stability in the Regulator

In order that there may be stability in the operation of this regulator, as in the operation of any governor, there must be a certain limit between the contacts of the primary regulating relay, where the regulating valve will be inactive. One of the most vital points to be met in the successful operation of the regulator is to decrease as much as possible the length of time between the change of load on the grinder motor and the change of water pressure in the cylinder of the grinder. Between these limits, a number of operations are performed, and in accomplishing the proper results, we have given considerable attention to the most efficient speed of operation of the regulator; that is, the ratio between the speed travel of the solenoids and the distance of travel of the valve piston controlling the admission of water to the grinder cylinders. This time ratio is adjustable from .2 seconds and up, so that an exact point for an installation can be set.

There are several limiting points from a practical standpoint that must be considered, among which is an unnecessary operation of the regulator, preventing close regulation, because the time element of the sequence of operations taking place when the pressure is to be regulated has a direct effect upon the hydraulic equilibrium of the system. This condition should not produce hydraulic oscillations or severe hunting will result, causing surges and inability to regulate with any degree of accuracy.

In order to dampen any irregularities in the hydraulic system, use is made of a surge tank of suitable capacity and connected with a by-pass check valve between the main regulating valve and the grinders. This surge tank acts in somewhat similar capacity to a surge tank in a penstock line of a hydro-electric power plant.

When the balanced regulating valve controlling the entrance of water to the grinder cylinders is suddenly opened, a certain amount of the increasing pressure on the side toward the grinders is dissipated into the surge tank, cushioning the effect and preventing an abrupt seizure of the wood upon the grinding stone, thereby reducing the formation of splinters and shives. When the balanced regulating valve is suddenly closed, to a certain extent reducing the pressure at the grinders, a certain amount of pressure is admitted from the surge tank, thereby eliminating any tendency for the regulator to hunt when the by-pass check valve is properly adjusted.

The object of the by-pass check valve is to prevent a large and rapid delivery of pressure from the surge tank to the grinders but yet be able to absorb considerable excess pressure when the balanced regulating valve is suddenly opened. To secure positive operation, compressed air is maintained in the top portion of the surge tank.

A Point of Refinement

As a further refinement, the gate or piston of the balanced regulating valve is so designed that in opening it, the area of port opening increases as the square of the degree of raising of the piston from its seat. By this means a heavy inrush of water is prevented when the valve is first opened, but an increasing amount is allowed as the opening increases. When the valve closes, the amount of water is reduced speedily at first but tapers off to a minimum as the piston approaches its seat. This gradual change of water will not be slow enough, however, to allow a drop in load on the motor, but by this characteristic, abrupt changes in pressure are prevented and smoother operation secured.

Regulators for Water Wheel Driven Grinders

In addition to a regulator for motor-operated grinders, there is also a regulator for water wheel-driven grinders. The apparatus comprising this type is similar to the regulator for motors except that a centrifugal governor belted to the grinder shaft is substituted for the actuating solenoid of the primary regulating relay. This arrangement maintains constant speed and constant load, so that the gate opening of the waterwheel may be fixed at the best position to permit the most efficient operating speed of the wheel.

All details of construction and design have been made with the principal object of reliability and on account of the class of labor usually employed, the apparatus has been made as near "fool proof" as possible so that the operation of the regulator can not be interfered with by the grinder men.

Since the regulator can be installed in a mill without interfering with the production and is so arranged that it can be cut in or out of service without any interruption or shutdown, a very flexible arrangement is secured.

In a period extending over three years, several installations have been operating continuously without any enforced shutdowns and the economies effected have in all cases paid for the equipment in six months or less.

CELLULOSE FIBRES AND THEIR REACTION TO DYES

A Consideration of the Problem Presented to the Paper Maker in the Use of Aniline Colors—Many Theories Advanced as to Just What Happens in the Union of Fibre and Color—A Tabulation of These Theories—The Condition of the Stock Brings About Marked Changes—Report by Otto Schutz, Chairman of the Dyestuffs Committee.

It will be convenient for the purpose of this paper to divide the colors used in the thining of papers into (1) pigment and mineral colors, and (2) aniline colors.

In regard to the behavior of cellulose fiber toward pigment and mineral colors, it is sufficient to say that the chemical constitution of the cellulose fiber has no bearing on the action of the colors worth considering. The variations observed in the tinting action of the dyestuffs used in papermaking are influenced rather by the higher or lower retention of the fiber for dyes, fillers, etc.—a purely physical condition, as distinguished from a chemical reaction. The practical papermaker expresses it by saying that a slow stock retains more of the pigment or mineral colors than a free stock, an explanation that is perfectly clear to a chemist who is familiar with the changes which cellulose undergoes as a result either of prolonged beating or exposure to the action of certain chemicals.

The Behavior of Aniline Dyes

The behavior of aniline dyes in contact with celluiose fibers presents a problem which is of great interest to papermakers. The problem has not been a pressing one since importations of dyes of this class have become less regular, but the papermaker will be confronted with it again as soon as the war is over and we return to normal conditions. The opinion has been expressed in some quarters that the manufacture of colored papers will gradually cease and natural shades only will be produced, returning to the conditions that prevailed about thirty-five years ago, before the introduction of the brilliant aniline colors that were so freely used before commerce with the vague conceptions that have arisen regarding recall with what avidity the aniline dyes were taken up and how speedily the natural tints began to disappear when the new dyes appeared on the market. It is fair to assume that like conditions will prevail as soon as similar dyes become plentiful and are offered at a reasonable price.

The study of the reaction of cellulose with aniline colors has been taken up by many well-known chemists and paper technologists, the theories that have been developed concerning the union of fiber and color being various and varying. The difficulties experienced in a study of this kind are concerned chiefly with the value conceptions that have arisen regarding the chemical constitution of cellulose and its combinations.

A Tabulation of Theories

Among the theories that have found more or less favor among students of the subject are the following:

(1) That color and fiber combine chemically during the dyeing process. Although this theory lacks scientific evidence of its correctness, absolute proof to the contrary has not been brought forward.

(2) The theory of adhesion. According to this theory the color settles on the surface of the fiber without penetrating it. An adhesion of this kind is stated by V. Perger to depend upon the chemical character of both color and fiber.

(3) The theory of adsorption of color by fiber. This theory has been demonstrated by Georgievic and Biltz, on cotton cellulose. The theory of the colloidal nature of the color solution and of fiber supports the theory of adsorption. That this theory is also applicable to wood cellulose fiber, which differs in structure from cotton cellulose, has not been satisfactorily demonstrated.

(4) The osmotic theory, according to which an infusion of the color solution takes place through the wall of the fiber. Bowans offers as proof of the soundness of this theory microscopical pictures of cross-sections of the colored fibers. These pictures show that the intensity of color diminishes from the outside toward the inside.

The foregoing theories have been based on experiments and research with pure cellulose fiber, and are of general interest only, having no specific concern for the practical papermaker who has to deal with cellulose fibers containing, besides other impurities, more or less of the lignin substance, which is a very important factor in coloring paper, especially when the lignitic material has undergone a cooking process.

Paper Maker's Consideration

We know from experience that some colors are not adapted for use with pure cellulose fibers free from lignin; on the other hand, the same colors may be used to great advantage on fibers which still contain lignin, and they show an extremely strong affinity for fibers containing the lignin substance, after the latter have undergone a cooking process.

The practical papermaker has also to take into consideration the mechanical treatment of the fiber. A fiber which has been crushed in the beater so that its ends show a great number of minute fibers (a so-called slow stock), takes on a deeper coloring with the same amount of dyestuff than a fiber which is only cut without being crushed (a so-called free stock).

This may be explained by the hydration of the fiber, which is pronounced in so-called slow stock; cellulose which has undergone a hydrolitic change in the beating shows a different behavior toward the color than the regular cellulose, or free stock. The longer the stock grinds the more the fibers are transformed into a collodial state, which favors the adsorption of the color, as referred to in theory No. 3—the adsorption theory.

If the beaters are not equipped uniformly and the rolls not kept in good order, the fiber of stock beaten in one engine will usually develop a more colloidal condition than the fibers beaten in another engine, and, as will be obvious, this may lead to variations in the tints of colored paper.

The Formation of Cellulose Hydrate

Another point not to be overlooked is the formation of cellulose hydrate in the stock or a variation in the percentage of the normally present cellulose hydrate. Cellulose hydrate has a greater affinity for certain colors than ordinary cellulose.

From a study of the foregoing points it may be determined that, besides other factors, the chemical and physical conditions of the cellulose fiber must be taken into account in any investigation of the cause of variations or disturbances in the run of colored paper.

Carlton Overton, who was graduated from Williams College in June of this year, where he performed fine work as halfback on the football team, is now connected with Castle, Gottheil & Overton, dealers in pulp, rags and waste paper, at 200 Fifth Avenue, New York, of which concern his father is a member. Mr. Overton is now endeavoring to unravel the mysteries of the rag market, and is busily engaged in trying to tread in his father's footsteps.

FACTORS IN THE RETENTION OF FILLERS

By John D. Rue, Assistant Professor of Chemical Engineering at the University of Michigan, Ann Arbor, Mich., and F. Edwin Ford, Holder of the Paper Manufacturers' Fellowship at the University of Michigan, Ann Arbor, Mich., 1915-1916—They Present a Paper on Mineral Fillers Giving the Results of a Series of Comparative Tests.

The addition of mineral fillers in the manufacture of some grades of paper has been practised for many years. In the early history of their use they were looked upon largely as adulterants. It later became recognized, however, that certain desirable qualities, such, for example, as smoothness of surface and opacity, were imparted to the paper which could not readily be obtained in other ways. This rendered their use legitimate and extended their application until at the present time they have become important raw materials in papermaking.

Possibly owing to the early disfavor with which the use of fillers was looked upon, comparatively little is known regarding the principles of their application and retention. The literature is singularly free from articles dealing with the factors affecting retention and their quantitative influence.

Increasing Amount of Retention

It is known in a general way that the amount of mineral retained can be increased by increasing the thickness of the sheet, by lowering the dilution of the pulp running onto the machine, by using a finer mesh wire, by decreasing the suction on the machine, and by increasing the hydration of the pulp by beating. Very little is definitely known, however, regarding the influence of alum, or other chemicals, of size, of the order of adding the materials to the beater, of the character of fineness of the filler, of the nature and properties of the fibres or of the mechanical treatments of pulp and filler, upon the retention.

One writer has pointed out that by a proper re-utilization of the white water "there is no considerable loss of loading material in papermaking, and for this reason the question how the loss of clay may be avoided does not apply. The question should rather read, How may we attain a high percentage of loading substance in paper? In that case the aids, such as boiling the clays or loading material with starch and casein, precipitation with the size or production of the loading substance in the stuff, gain increased importance."

Two Classes of Mineral Fillers

Mineral fillers may be divided roughly into two classes: those which possess a crystalline character, such as barium sulphate (barytes or blanc fixe), hydrated calcium sulphate (gypsum, terra alba, pearl hardening or crown filler), agalite and "fibrous alumine"; and those which are capable of developing a colloidal character upon being added to water, such as the clays and the talcs.

In the case of the heavy minerals, like barium sulphate, the high specific gravity causes a rapid settling out of the mineral from the fiber and gives a consequent low retention. The fibrous nature of agalite and "fibrous alumine" aids in their retention, since it gives to these minerals a slight "felting" quality.

The influence of the colloidal character of the talcs and clays is not so well understood. As a rule it is only the less colloidal clays that find application in papermaking. The highly colloidal ones show a high plasticity and are in greater demand in the ceramics industries.

Considerable work has been done on the colloidal properties of clays and the method of developing these properties. Bleininger (14), has shown that the addition of a small fraction of a percent of solium hydroxide to clay in the presence of water will cause a marked increase in the colloidal content. Ehrenthal (18), Heuser (19), Von Possanner (20), Ström (17), and Rohland (23) have thrown some light on the relation of the colloidal properties of clay to dyestuffs. These investigators have shown that the affinity of mineral fillers for dyes is dependent upon the amount of colloid in the filler and upon the colloidal character of the dye itself. Talcs and clays, which are capable of developing a comparatively high colloid content show a relatively high retention for the dyes. In fact, it has been suggested that the dye retention test be used as a means of measuring the colloidal content. This would prove important to the papermaker if the contention of Rohland should be substantiated that the more highly the colloidal properties of a clay are developed the greater is the tendency for the filler to adhere to the fiber. Rohland claims that a filler should be selected for its ability to develop colloidal properties if high retention is to be obtained.

Comparative Tests.

The results of an investigation of the behavior of a single sample each of an American China clay, two grades of talc and an asbestine may be summed up as follows:

1.—China clay and the talcs show approximately the same retention when no size or alum is used.

2.—The addition of size and alum very materially increases the retention of the talcs, asbestine and clay, but increases the talcs and asbestine more than the clay.

3.—Where white water is completely re-used the concentration of clay in the white water steadily increases, but the percent of the clay present that is retained decreases, owing to the fact that the coarser material is removed first. The combination of these two variables results in a final fairly constant retention when calculated on the basis of the clay added each time.

4.—Increasing the length of time of agitation of the clay with the fiber decreases the retention. This holds true whether size and alum are used or not.

5.—Alum (without size) seems to have little influence on the retention except as it aids removal by filtration, owing to its flocculating action on the colloidal clay.

6.—Size used in connection with alum has a very marked influence in increasing the retention.

7.—Hydration of the pulp through beating aids the retention.

8.—The effect of absorption seems to be relatively unimportant compared to the filtration action of the pulp.

9.—The order of adding the pulp, clay and alum, when no size is used, has practically no effect on the china clay retention. In case the clay were a highly colloidal one, it is probable, however, that a higher retention would be obtained by adding the alum to the clay before mixing with the pulp.

New York Trade Notes

The Hollywood Paper Company, Inc., general paper dealer, has rented the store at 27 East Tenth Street, where it will carry on its usual business which hitherto was situated at 48 East Tenth Street.

* * *

A new concern has been incorporated under the name of Hendryx Company, Inc., at 130 Liberty Street ,which will deal in closures for bottles, containers and paper stocks. The company is incorporated with capital stock of $25,000 by W. H. Hendryx.

STANDARD METHODS FOR TESTING MATERIALS

Report of the Committee on Standard Methods of Testing Materials Used in the Making of Paper, Such as Starch, Lime, Soda Ash, Etc.—Recommendations of the Committee as to Preliminary Examination and Testing of the Various Articles—The Report in Detail as Presented by Max Cline, Chairman of the Committee.

The following methods for the examination and analysis of starch and starch products, lime, caustic soda, and soda ash are submitted by a subcommittee of the Committee on Standard Methods for Testing Materials Used in the Manufacture of Paper. They are now presented for the consideration of and possible adoption by the Technical Association of the Pulp and Paper Industry.

Starch and Starch Products

Starch is used in the paper industry for four purposes: (1) Engine sizing; (2) tub sizing; (3) pasting, and (4) coating.

It is necessary to divide starch and starch products into two main classes, with a method of analysis for each class. The first to be known as raw starch and to include all starches which have not been treated in any other way than by the purifying methods used in their manufacture. The second to be known as converted starches with subclasses. The method of sampling for all kinds of starch products to be the same, and to be embodied as part of the method of analysis.

Sampling.—Ten bags or barrels are taken from different parts of a car. These are sampled by means of a 1-inch tryer 12 inches long. One filling of the tryer is to be taken from each bag or barrel. Samples so obtained are mixed, bottled and sealed in three jars, one for each party to the transaction, and one for reference. For smaller deliveries than a carload 10 per cent at least of the bags or barrels should be sampled.

Preliminary Examination

Preliminary Examination.—Raw Starch: (*a*) Spread out 100 grams of the sample on a sheet of white glazed paper, and examine for foreign material.

(*b*) Mix this sample with 500 Cc. of water to a smooth cream and strain through a 200-mesh silk bolting cloth. Compare residue on silk with standard sample of the same grade, treated in the same manner, at the same time.

(c) Stir filtrate from above for two seconds with a circular motion, and let stand thirty seconds. Decant carefully, and compare residue with a standard sample of the same grade of starch, treated in the same manner, at the same time.

Moisture.—Dry approximately 5 grams to constant weight at 100° Cent. Loss in weight is calculated as moisture.

Ash.—Weigh out 1 gram of the sample; transfer to a platinum crucible; ignite to constant weight.

Acidity.—Weigh out 20 grams on a watchglass. Transfer to a 250 Cc. porcelain dish. Add approximately 200 Cc. of water, and stir until starch forms a smooth cream. Titrate with N/10 Caustic Soda, using phenolphthalein as indicator until a faint pink color persists for twenty seconds.

Alkalinity.—Method is same as for acidity, except that sample should be titrated with N/ Sulphuric Acid until the pink coloration just disappears.

Test for the Presence of Alkaline Starch or Alkali.—Add a few drops of phenolphthalein solution to water in a white porcelain dish; sprinkle in a little of the dry sample. If some of the grains turn pink it indicates that the sample is a mixture of raw starch and alkaline starch or alkali. If all the particles turn pink the material is an alkaline finished starch.

Viscosity.—Take 12 grams of the sample in 300 Cc. of water, bring to boil, then boil for ten minutes with constant stirring, in an aluminum beaker over a naked flame. Determine viscosity at 100° Cent. with 200 Cc. of the liquid in a Scott viscosimeter, standardized as below. Express result as a ratio.

Scott starch viscosity
Scott water viscosity
=Viscosity number.

The standardization of the Scott viscosimeter is as follows:

Calibrate the Scott viscosimeter to hold 200 Cc. of water at 100° Cent.

Determine viscosity on first 50 Cc. withdrawn.

Converted Starches

Owing to the number and variety of the products on the market, their classification is a matter of some difficulty. The method of conversion, however, may be used as a means, and thus the following classes can be arranged:

(1) Thin boiling starch, mainly used for tub sizing, converted by treatment with weak acid solutions by the "in suspension" or "drying in" process.

(2) Partly dextrinized starches, and dextrins, made by damping the starch with small quantities of acid, and converting at a high temperature by the dry process.

(3) Oxidized starches.

(4) Acetylated starches.

(5) Alkali-treated starches, including products consisting of raw starch mixed with certain quantities of various alkalis and alkaline salts.

(6) Mixtures of starch products and mineral fillers.

(7) Mixture of starch products with glue and casein or other sizing agents.

(8) Products in solution or paste form.

Sampling, Moisture and Ash are the same as for raw starch.

Acidity and Alkalinity.—First method same as for raw starch.

Total Acidity.—Mix 10 grams of the sample in 200 Cc. of water and heat on a water bath for five minutes after reaching 75° Cent.; cool and titrate. This gives the acidity within the starch granule.

Viscosity.—In determining viscosity the starches are divided into three classes:

(*a*) Low boiling, or laundry starch; (*b*) medium thin boiling; (*c*) high thin boiling, with a decrease in viscosity from (*a*) to (*c*).

For (*a*) the viscosity should be determined in a 10 per cent solution; for (*b*) in a 20 per cent solution; for (*c*) in a 30 per cent solution. Otherwise the method is the same as for raw starch.

Testing for Added Materials

Added Materials.—These are tested for by the ordinary methods used in separating and identifying mineral fillers, metallic salts, glue, casein, and other vegetable sizes.

The identification of the product in relation to the classification of the process of manufacture involves a more exhaustive analysis, including:

(1) The identification of the starch by microscopical observation.

(2) Combined acid to determine the degree of acetylation of the product.

(3) Solubility in cold water and reaction with Fehling's solu-

tion, which gives a measure of the degree to which the starch has been hydrolyzed and dextrinized.

(4) Color reaction with iodine and other agents.

(5) *Technical Valuation*—Character of Size. A sample of the starch product is mixed with four or five times its weight of water, and heated on a water bath for at least twenty minutes after swelling.

(*a*) Portions of the size are allowed to cool, and the time of setting observed. This gives a figure for the permanency of the solution.

(*b*) A little of the size is rubbed out on paper and allowed to dry, when the surface and finish produced is observed.

(*c*) The solution is run out on a clean glass plate to a thin layer and allowed to dry at room temperature. Film produced is examined and compared with, say, a gelatin film for physical characters.

Sizing Strength.—For paper coating the size is prepared under the proper conditions for the particular product and mixed with definite quantities of clay or other filler. A series of samples is made up at graduated strengths according to the proportions used in practice, and samples of paper are coated by color obtained.

The sizing power of the sample is determined, in comparison with other sizing materials, treated in the same manner, at the same time, by noting the resistance to spirit varnish, or by using the sealing wax test and others. In most cases both for coating and tub sizing, the most accurate and reliable results are only obtainable by a working trial under standard conditions.

Soda Ash

Sampling.—Five per cent of the bags, or barrels, in the shipment should be sampled by means of a sampling auger in the usual manner.

Moisture.—Heat a carefully weighed amount of the soda ash in a covered platinum crucible to constant weight. The heating should be so regulated that the bottom of the crucible when viewed in subdued light shows a very faint trace of color.

Alkalinity.—Weigh 5 grams of the soda ash on a watchglass, transfer to a beaker, and dissolve in about 300 Cc. of water. Transfer to a 500 Cc. graduated flask, cool, and make up to the mark. After thorough agitation, pipette 100 Cc. in to a beaker and titrate with standard acid, using methyl orange as the indicator.

Calculate to per cent of Na_2CO_3 on the dry soda ash.

Sulphuric Acid

Sampling.—Contents of carboy shall be well mixed before sampling.

Specific Gravity.—Determine the specific gravity by means of standard hydrometer.

Sediment.—A portion of the acid should be taken immediately after agitation and set aside in a tall glass cylinder to settle. The amount of sediment should be noted.

Acidity.—Run 50 grams of the acid into a beaker containing 200 Cc. cold distilled water; transfer to a 1,000 Cc. graduated flask when cooled to room temperature. Make up to the mark with distilled water and mix well. Draw out 100 Cc. of this acid by means of a pipette and make up to 500 Cc. with distilled water in a graduated flask. Draw out 50 Cc. of this acid (equal to 0.5 Gm. of the original sample) in a beaker and titrate with standard alkali, using methyl orange as the indicator. Calculate per cent H_2SO_4 in sample.

Iron.—Determine colorimetrically by the method given in the procedure for analysis of aluminum sulphate.

Caustic Soda

Sampling.—Break open the drum, crack off clean pieces and place them in air-tight fruit jars. The pieces should be crushed and ground as rapidly as possible in the laboratory and samples preserved in an air-tight jar or rubber-stoppered bottle.

Alkalinity.—Fill a glass-stoppered weighing tube with a portion of the sample and weigh approximately 1 gram of the sample in a 350 Cc. beaker. The caustic soda is then dissolved in about 200 Cc. water, titrated first with standard acid and phenolphthalein as the indicator, and then completed by titrating for total alkali with methyl orange as the indicator.

The titration with phenolphthalein gives the acid consumed by the NaOH and half the Na_2CO_3. The second titration gives the acid consumed by the remaining half of the sodium carbonate.

Twice the difference between the two titrations gives the number of Cc.'s of standard acid consumed by the NaOH, from which the percentage of NaOH in the caustic soda may be calculated.

NOTE.—If through damage of the drum in transportation the caustic soda has absorbed a considerable amount of moisture, the following procedure should be used:

Sample as above. Determine the alkalinity on the dry basis by weighing approximately 1 gram of the sample in a tared, covered silver crucible, heat to fusion and until all moisture is driven off. Cool in desiccator and weigh. The weighed, dry sample is then dissolved in about 200 Cc. water and procedure followed as above.

Lime

Sampling—One shovelful out of every tenth wheelbarrow of lime, as it is unloaded from the car, should be taken and placed on a clean floor or canvas. The combined sample should be crushed, preferably by a laboratory crusher, and quartered down to desired amount. The sample should be kept in a well stoppered bottle or friction top can.

Moisture and Carbon Dioxide.—Ignite about 1 gram of the finely pulverized sample to constant weight in a covered platinum crucible, in the full flame of a blast lamp or No. 4 Meker burner.

Impurities.—A one gram sample of the pulverized lime is weighed in a 300 Cc. casserole, slightly dampened with water, and after covering the casserole with a watchglass, about 25 Cc. Conc. HCl is carefully poured on the lime. The solution is evaporated to dryness and the residue taken up with a few drops of Conc. HCl. The HCl solution is transferred to a beaker, made up to about 300 Cc., a few drops of Conc. HNO_3 added, and the solution boiled for a few minutes. Add 10 Cc. of a 5 per cent NH_4Cl solution and NH_4OH until present in slight excess. Boil until odor of ammonia is barely perceptible. The precipitate is filtered, washed, ignited, and weighed as impurities.

NOTE.—In case of dolomite lime, or lime containing a large proportion of magnesia, a double precipitation with NH_4OH is recommended. Dissolve the first precipitate by means of hot dilute HCl on filter paper, catching the solution in beaker used for first precipitation. Wash the filter paper free from acid, make up solution to about 200 Cc., bring to boil, precipitate with NH_4OH as before and filter the precipitate on filter paper used previously.

Lime (CaO).—To the filtrate, or combined filtrates, from the "impurities" precipitate, a few drops of NH_4OH are added, and the solution brought to boiling. To the boiling solution 20 Cc. of a saturated solution of ammonium oxalate are added drop by drop, and the boiling continued until the precipitated CaC_2O_4 assumes a well defined granular form. It is then allowed to stand for thirty minutes, or until the precipitate has settled, decanted through a filter, redissolved with HCl, washing the filter wash five or six times with hot water, and a final wash with ammonia water. The solution is then made up to 250 Cc. with water and brought to boiling. Add 1 Cc. ammonium oxalate solution and ammonia drop by drop until present in slight excess, and boil for two or three minutes. Allow to stand for thirty minutes or until the precipitate has settled, filter and wash (the volume of wash-water should not be too large), weigh as oxide by ignition and blasting in a covered crucible to constant weight, or determine with dilute standard permanganate.

NOTE.—In the absence of magnesia the second precipitation may be omitted.

Magnesia (MgO).—The combined filtrates from the calcium precipitates are acidified with HCl and concentrated on the steam bath to about 150 Cc., 10 Cc. of saturated solution of $Na(NH_4)HPO_4$ are added, and the solution boiled for several minutes. It is then removed from the flame and cooled by placing the beaker in ice water. After cooling, NH_4OH is added drop by drop with constant stirring until the crystalline ammonium-magnesium orthophosphate begins to form, and then in moderate excess, the stirring being continued for several minutes. It is then set aside for several hours in ice water and filtered. The precipitate is redissolved in hot dilute HC_2l, the solution made up to about 100 Cc., 1 Cc. of a saturated solution of $Na(NH_4)HPO_4$ added, and ammonia drop by drop, with constant stirring until the precipitate is again formed as described and the ammonia is in moderate excess. It is then allowed to stand for about four hours in ice water, when it is filtered on a paper or a Gooch crucible, ignited to constant weight over blast or No. 4 Meker burner, cooled and weighed as $Mg_2P_2O_7$.

NOTE.—To avoid danger of injury to platinum crucible, when the precipitate is filtered on paper, it is advisable to dry the precipitate and filter paper, and separate the precipitate from the paper, igniting the paper in the crucible, adding the precipitate to the ash in the crucible and igniting to constant weight.

Causticizing Test.—Boil 4 grams of the lime with 8 grams of dry soda ash in 500 Cc. water in a covered beaker for 1 hour. Cool, make up to 500 Cc. in a graduated flask; mix, allow to settle clear, draw out 50 Cc. of the clear solution by means of a pipette, and titrate for NaOH with standard acid as given in procedure under caustic soda. Knowing the weights of both lime and soda ash used, it is easy to calculate the amount of lime required to completely causticize a given amount of soda ash.

Free Lime.—Five grams of the lime is made into a milk and diluted to 500 Cc. in a graduated flask. Aliquot portions are pipetted from the well shaken milk and titrated with standard oxalic acid and phenolphthalein. Calculate to per cent CaO.

Calcium Carbonate.—An aliquot portion of the milk is dissolved in an excess of standard HCl boiled to remove CO_2, and the excess acid is titrated with standard alkali and methyl orange.

This value for total CaO, less the free CaO already determined, gives the CaO combined as $CaCO_3$.

Moisture.—From loss on ignition subtract the CO_2, calculated from the $CaCO_3$ as determined above.

SUGGESTIONS AS TO PURCHASE OF PULP WOOD

The Necessity of System in Buying Is Set Forth in Report of Committee Submitted in Connection with Addresses by Carlile P. Winslow and Rolf Thelen of Madison, Wis.—A Discussion of a Land Policy by New York in a Report by Hugh P. Baker, Chairman of Committee on Standard

The report of the committee on standard specification for buying of pulpwood was submitted with the address of Carlile P. Winslow and Rolf Thelen, of Madison, Wis., on a somewhat similar subject. Chairman Hugh P. Baker in his report referred to the faulty methods of New York State in taxing its land and argued in favor of a more general distribution of taxes over all the land.

"The best argument for a sound land policy in New York," he said, "is the present and future finances of the State. The total of the State, county and municipal debts in New York is equal to about $40 for every acre of land, good and bad. Two years ago a direct tax of $18,000,000 was placed upon the people of the State, and while a direct tax was avoided during the present year, it probably cannot be avoided in the future.

"Why shouldn't the State expect not alone the half that is devoted to agriculture, but all of its area, to share in the support of the Commonwealth? New York is in the belt of the most favorable forest production, and on lands in Europe not as well suited to the growing of forests as most of the forest land in New York they were producing, before the great war, from $2 to $6.

Consumption of Pulpwood

Mr. Winslow and Mr. Thelen gave a paper which is summarized as follows:

The annual consumption of pulpwood in the United States amounts to approximately 4,300,000 cords, representing an expenditure in the neighborhood of $36,000,000 per year by approximately 250 companies. From these figures it is apparent that the question of proper pulpwood specifications is of wide importance.

While the value of pulpwood is dependent basically upon the tons of dry pulp that can be produced from a given number of dry tons of wood, the great quantity of the wood is bought and sold either on the basis of an estimated and variable volume of wood in an assumed space, or on the theoretical quantity or volume of lumber which can be cut. Thus, with dry weight as the real and final measure, we find substituted for it a variable and indefinite volume, and the result in the long run is fair to neither seller nor purchaser.

While by far the greater proportion of pulpwood is purchased as cordwood or by log scale, it must not be overlooked that the use of sawmill waste is steadily increasing, and amounts at present to approximately 7.7 per cent. of the total. It is manifestly impossible to apply the log scale to the measurement of such material.

While it is entirely evident that a completely satisfactory basis of specification cannot be secured with a unit of measure based on volume, it is equally apparent that such unit of measure must continue to be used very largely for this purpose. It is desirable, therefore, where perfection cannot be had, to compromise on the issue, and some suggestions along this line are as follows:

1. An enumeration of the basic and fundamental principles which must underlie any correct system of specifications should show clearly the relation of yield of pulp to the dry weight or specific gravity of the wood and the relation and probable variation of this dry weight in a given volume.

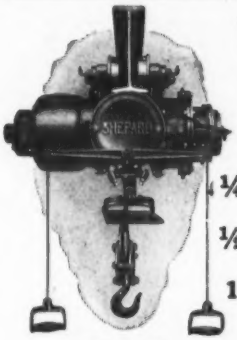
2. For conditions where the cord will continue to be used as the unit of measure, the formulation of definite specifications to the end that this unit of measure may come to represent an approximately fixed volume of solid wood.

3. A study of the relation of actual cubic contents of logs of varying sizes to the board foot measure, as determined by the various log scales used in the purchase of pulpwood.

4. A study into all phases of the question of supplying pulpwood in the form of baled chips as the source of supply. Such a study should cover such points as the quantity of chips secured from a ton or a stacked cord of various forms of mill waste and from a standard cord, the cost and best methods of chipping, drying and baling, and finally of methods for determining the moisture content of the baled chip, which would presumably be sold on a weight basis.

5. Attention to methods for limiting, describing and illustrating such points as "knotty," "rough," "doty," "fire scarred," "heart-rot," "sap-rot," etc. All of these defects detract from the value of the material, but to just what extent is not at present generally established.

6. Other points, such as standard methods of determining the dry weight and moisture content of the wood, or of measurement of wood fiber dimensions, also require attention.



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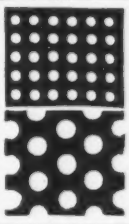

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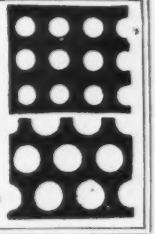

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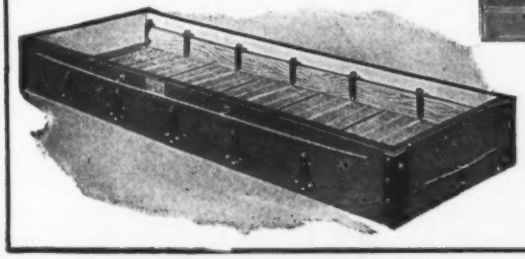

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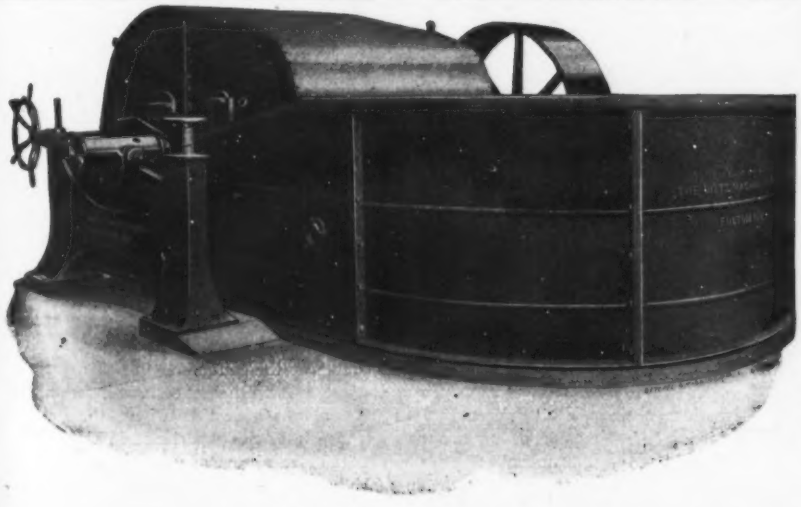

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GUESSES ABOUT THE SUPPLY OF WOOD

P. S. Lovejoy, Assistant Professor in Forestry at the University of Michigan, Presents Numerous Interesting Facts in Connection With This Important Question—Says a Dependable Inventory of the Forest Resources of the Country Should Be Made by Combined Federal, State and Private Agencies—5,000,000 Acres of Timber Land Are Needed.

Following is the substance of one of the papers of most general interest that was read, that on "Guesses About Pulpwood Supply of the Future," by P. S. Lovejoy, assistant professor in forestry at the University of Michigan.

Outlook for Future Pulp Wood Supply

Mr. Lovejoy pointed out that the amount of cotton or corn raised in the country each year, the regions of production and the approximate costs and sale values were known, and that with about the same relative degree of accuracy the principal items of timber production were known. In the case of pulpwood, satistics compiled from reports of the mills showed the consumption by species, by States, the amounts and kinds imported and how these items compare with past ferformances.

Attention is now being devoted, Mr. Lovejoy said, to learning where our remaining forests are and what is in them, but the results are far from satisfactory as compared with the record of manufacturing. He asserted that we did not know now, within 25 per cent., what our stand of saw timber is for the whole country or for a given region or State. Practically nothing is known about the existing pulpwood supply, so that guesses as to the future cannot be accurate, but Mr. Lovejoy explained that there were many things upon which such guesses could be based.

Competition Between Saw Mill and Pulp Mill

A condition that would have to be met was greater competition between pulp mill and sawmill, Mr. Lovejoy said, as the value of lumber was constantly increasing while the merchantable grades of lumber were declining. The pulp mill is at a disadvantage in this respect: that it represents a greater capital than the sawmill and cannot be moved to a new location.

On the other hand, Mr. Lovejoy continued, the pulp mill owner is able to use a poorer grade of material than the sawmill, and every time a new way of using still poorer material is found he increases his supply of raw material and extends his period of operation at one place. Another way in which to increase his available raw material is to see that the forests which are tributary to his plant are not burned out. Forest fires cannot be insured against and always result in the end in considerable loss to the industry. A really efficient organization for the prevention of fire can usually be maintained at from 2 to 10 cents per acre each year, Mr. Lovejoy stated, and it is cheaper and more effective to protect large areas over a long period than otherwise.

Wood End of Pulp Production Wasteful

Mr. Lovejoy pointed out that in many cases the woods end of pulp production was very wasteful. As an example, he cited a given forest area, having a stand of one-third beech, birch and maple, one-third spruce and one-third hemlock and balsam. Only a small part of the stand offers good log timber, not sufficient to attract a sawmill. A contractor is obtained to get out the pulp stock, the mill specifying that the stock shall not exceed 5 per cent. species other than spruce. The spruce comes out, together with all the balsam that the contractor can get by with. That skins the stand, but is not the worst of it. A lot of slash is left on the ground offering good material for a fire. If fire does not come the wind throws a lot of balsam. Side-light hitting the hemlock parch-blights it and it dies. Conditions are favorable to tree-destroying insects. If the forest finally survives it will not longer be a pulp-producing forest.

As a remedy for this condition, Mr. Lovejoy urged a dependable inventory of the forest resources by combined Federal, State and private agencies and the development of greater co-operation between wood-using plants, so that everything the forest produced could be utilized. He suggested that private owners might be induced to go into the business of raising timber, rather than have all the forests owned directly by the mills.

Conservation of Raw Materials Essential

The conservation of raw materials was essential to a well-organized industry, and there was danger that the pulpwood supply might not be protected. Growth of timber was slow, a cord an acre being the approximate annual rate for well worked forests. The annual consumption is about 5,000,000 cords of pulpwood in this country; a tree of 50 years of age is the best for the purpose. Working on this basis, it would clean-cut from 150,000 to 200,000 acres each year to meet the demand. Under the present system of unscientific cutting, the number of acres cut over each year reaches several million.

5,000,000 Acres of Timber Land Needed

Putting it another way, Mr. Lovejoy asserted that 5,000,000 acres of timber land were needed to establish the industry on such a basis, provided that only 100,000 acres were cut over each year. Compared with the 500,000,000 acres needed for all timber requirements of the United States, this is a small amount, he explained, and it is up to the pulpwood men to see that it does not get lost in the shuffle.

Fire and heavy taxes prevent the growing of timber from being an attractive investment proposition to the individual, but for a corporation it is different, said Mr. Lovejoy. Under proper management the forest land will begin to render return at once. Several pulpwood mills are already on this basis.

In closing, Mr. Lovejoy urged the important of less severe competition and greater co-operation. Such changes were radical, but they must be undertaken to preserve the industry.

International Paper Co. Dividend Up

The International Paper Company doubled its dividend Wednesday by declaring a quarterly distribution of 1 per cent., or 4 per cent. per annum on the preferred stock, as compared with the 2 per cent. annual rate maintained since 1908. There is $22,407,000 of the preferred outstanding.

Anderson Marble Papers

The Anderson Marble Paper Company, formerly of 626 and 630 Driggs Avenue, Brooklyn, are now occupying more modern quarters at 427 West Thirteenth street, New York. The plant will cover an area of 50x200 feet, and is equipped with all modern and special machinery with which to produce marble papers. The various patterns now being made at the Anderson plant are combs, shells, spots, waves and agate. Mr. Rheinauer, who is the proprietor, was reared in Germany in a section where the best of marble paper is made. From his broad experience in this line it will no doubt be a boon to the American paper market to be able to secure high grade marble papers made in this country. The phone number of the Anderson Marble Company is Chelsea 7427.

BUYERS WANT PAPER QUICK

We can furnish our watermarks now
owing to unusual natural resources

Belgian Bond **Transcript Bond**
Pilgrim Bond **Systems Bond**

EASTERN MANUFACTURING COMPANY

BANGOR, MAINE

New York Office
200 FIFTH AVENUE
Fifth Avenue Bldg.

DAILY OUTPUT { 75 TONS PAPER
100 TONS SULPHITE

Western Office
FORSYTHE-HARDING PAPER CO.
Chicago, Ill.

The Ashcroft
Paper Tester

The Ashcroft
Thickness Gauge

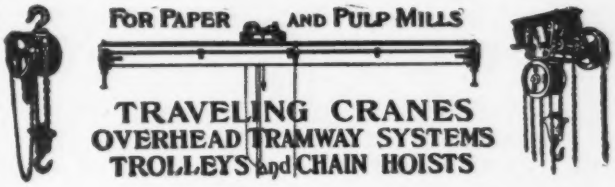
Actual necessities for all those who make, sell or purchase paper in any form.
The thousands in daily use testify to their efficiency.

THE ASHCROFT MFG. CO.

119 West 40th Street New York
29 North Jefferson Street Chicago, Ill.
141 Milk Street Boston, Mass.

HUGH R. BLETHEN

21 Park Row, NEW YORK, N. Y.



TRAVELING CRANES
OVERHEAD TRAMWAY SYSTEMS
TROLLEYS and CHAIN HOISTS

Air Compressors—Air Hoists
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ESTABLISHED 1842

FOURDRINIER WIRES
DANDY ROLLS
CYLINDER
MOLDS

CHENEY BIGELOW WIRE WORKS

Springfield, Mass.

MANUFACTURERS

Brass, Copper and Wire Cloth,
Bank and Office Railings and Grille Work

AMONG THE EXHIBITORS AT THE CHEMICAL SHOW

Numerous Products and Processes of Special Interest to Paper and Pulp Men Are Shown—Specially Interesting Feature Also Is the Projection on the Screen of Numerous Pictures Having to Do With Technical Subjects—Exposition Is Crowded Throughout the Week—Visitors Include Many Men of Prominence in the Paper and Pulp Industry.

The Second National Exposition of Chemical Industries was thrown open to the public at 2 P. M. on Monday of this week. The exposition had twice as many exhibitors this year as last and a conservative estimate of the number of visitors that will have attended during the week might be placed at 100,000. The exposition afforded an opportunity to the public to see collected together a remarkable assortment of apparatus, machinery and products, both raw and finished, which are representative of the great usefulness of the chemical and allied trades.

One feature of the exposition was the projection of motion pictures every evening from 7:30 to 10:30 P. M. The films were largely technical in character, but contained views which are of sufficiently broad interest to make them appeal to the layman. No fewer than eleven of the half hundred films that were projected were furnished by the Bureau of Mines. The subjects chosen deal with different branches of electrochemistry and pulp paper making. The most interesting subjects from a paper maker's viewpoint are as follows: Making of Blotting Paper; Manufacture of Paper; Telling the Forest; Distillation Apparatus; Striking a Light—Matches.

The visitors to the exposition were for the most part people who were sincerely interested in the things that were on exhibition. Exhibits of interest to every type of person were shown. Among the exhibitors were the following:

The Downington Manufacturing Company, of Downington, Pa., manufacturers of paper, pulp and nitro-cellulose machinery, had on exhibition a miniature duplex beating machine, which was shown grinding up rag stock for use in the making of high explosives. The beater on display is 21 x 4 inches in size. The regular stock beater made by the company is 21 x 4 feet, and is used in the manufacture of paper. Another machine which is manufactured by this company was shown by illustration. It is a resin evaporator. The wood before and after the evaporating process has been applied, together with the residue of resin, was also on exhibition. The booth of the company was under the supervision of Guyon Miller, president of the company; P. L. Ellis, assistant superintendent, and Jacob Edge, sales manager of the company.

F. C. Huyck & Sons, of Albany, N. Y., makers of Kenwood felts and jackets, had on exhibition samples of the felts which are used in paper making machines. Pocket felt books and pencils were distributed by the company which are of value to all mill men in keeping their felt data close at hand. The booth was in charge of Frank J. McGovern.

The Electro Chemical Company, of Dayton, Ohio, exhibited two electrolytic cells for producing sodium hypochloride for bleaching purposes. This bleaching liquor can be applied advantageously to all vegetable fibres. There are two forms of cell—the continuous and intermittent. John Gerstle, the consulting engineer, and J. H. Pfeifer, the sales manager of the company, were in charge of the exhibit.

The Electron Chemical Company had on exhibition photographs of the large capacity electrolytic cells which produce a bleaching liquor of chlorine and caustic soda. These cells have been installed in some of the largest paper mills in the country, and it is said that they are found to be more efficient and economical than most other processes used to produce bleaching liquors for pulp. The exhibit is under the direction of H. I. Allen and D. B. Ayerst, of the Electron Chemical Company, and W. E. Parsons, of the Moulton Engineering Corporation, of Portland, Me., who is the consulting engineer for the chemical company.

The Atlantic, Gulf & Pacific Company, of New York, offered information as to the Mill Basin, the new industrial district in New York Harbor. The American manufacturer of chemicals, according to this company, can there secure a tidewater site for his plant at low cost. Sufficient land upon which to care for any expansion of business can also be secured there. The booth was in charge of H. W. Stickle, vice-president of the company, and his associates.

Madero Bros., Inc., exporters and importers, had a booth in the exposition for their chemical department. All kinds of heavy chemicals are exported by this company, and one of the members of the firm or one of the department heads was constantly in attendance to explain their business and to meet the members of the American Chemical Society.

The work of the Bureau of Standards was on exhibition and members of this department came to New York from Washington to explain the work that is being done there for chemists and paper makers. Among the various interesting processes explained by these representatives is one for regaining the wax from old wax papers. The wax can be regained and the old paper can be used over again by means of this process. Various methods for testing paper were also on exhibition. These methods are the work of Mr. Clark, who is in charge of the paper research work of the department.

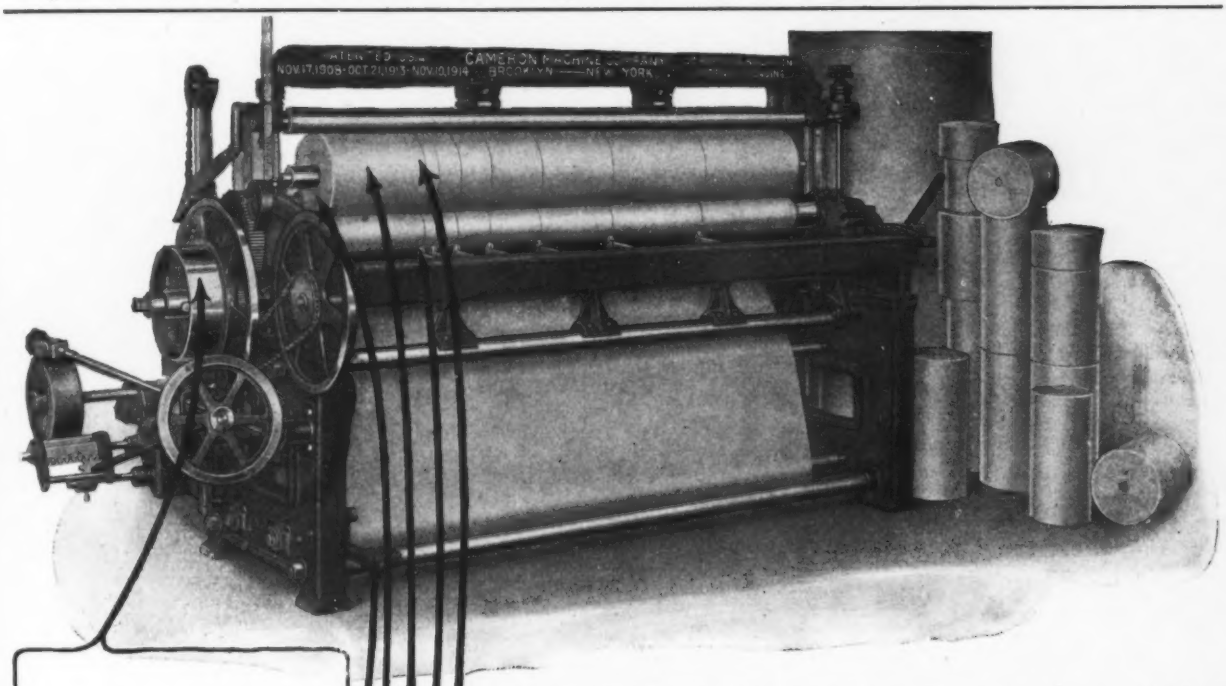
The Zaremba Company, Buffalo, N. Y., demonstrated its Zaremba patent evaporator. The first apparatus of this type was sold in 1906, and it has been doing efficient work since the day it was started. These evaporators are built so that they are fool proof and can be run by cheap labor without any danger of injury to the apparatus or loss of product. The exhibit was in charge of Edward Zaremba, president of the Zaremba Company of Buffalo, and H. E. Jacoby, New York representative of the company.

Marden, Orth & Hastings Company, Inc., occupies a prominently located booth on the main floor and attracted much attention by its American dyes for the pulp and paper industry. Interesting sample books showing the character of the work obtainable with these goods were furnished to those interested. The exhibit was in charge of H. G. McKerrow.

The Swenson Evaporator Company, Chicago, had in operation a demonstration size, double effect, standard Swenson Evaporator. The type was the same as that employed for black liquor or sulphite waste. The machines have very generally given satisfaction wherever they have been installed by manufacturers in the industry. The exhibit was in charge of F. M. de Beers, president of the company.

The Process Engineers Limited, Montreal, Quebec, were represented by officers of the concern who explained its sizing process for paper mills. This process has been installed in practicaly all the mills in Canada where, it is said, it is giving very general satisfaction. The use of the process in this country also is extending very satisfactorily. The exhibit was in charge of J. A. De Cew, president of the company.

(*Continued on page* 16.)



High Speed Drive

Treadle Control Variable Speed

Even Edges

Firm Even Tensioned Rolls

Quick Change of Cutters

Clean Cut

A FEW Important Features of the Cameron Principle Slitting and Rewinding Machine

The advantage of the Cameron "Score Cutter" method, considered apart from the fact that it is the ideal method to combine with the Surface Rewind, may be summed up as follows:

1. The "Score Cutter" does perfect work on any kind of paper made, as well as fabrics and other materials.

2. The "Score Cutter" gives a clean, smooth slit and does not stretch the edge of the paper.

3. The "Score Cutter" will operate perfectly at unlimited speed as there is practically no friction or wear on the cutting edge.

4. The "Score Cutter" need not be kept to any special diameter, as the pressure spring will take up any variation.

5. The "Score Cutter" does not have a keen cutting edge, but an edge slightly blunt like a cold chisel, and it is easily kept in prime condition by the operator.

6. The same features which make the "Score Cutter" efficient for light duty, make it equally serviceable for heavy duty, as it will handle work from the sheerest tissue paper up to box board.

7. Re-spacing of "Score Cutter" is quickly done by simply releasing the spring pressure on all the cutters at once, and sliding the cutter holders to the new positions.

8. Re-spacing of "Score Cutters" requires only five to ten minutes for any new arrangement of widths. When Gang Spacers are used for narrow strip, even less time is required.

9. Removing or replacing a cutter requires only to lift it on or off its support—holder and all—without disturbing any other cutter or any part of machine.

10. Any width or assortment of widths can be spaced from one-quarter inch up.

11. Strip as narrow as one-quarter inch can be produced by special "Score Cutters."

12. The waste or trim at the edges may be extremely narrow.

13. The rolls produced do not interweave or stick together.

14. Injury to the operator by this method of slitting is impossible.

CAMERON MACHINE COMPANY

57-61 Poplar Street, Brooklyn, N. Y.

BABBITT METAL

Its History—Some of Its Features—The Melting Points—Some Simple Tests for Determining the Composition of the Metal.

By ALEXANDER T. DEINZER, Chemist

Babbitt metal was invented by Isaac Babbitt about the middle of the nineteenth century and contained about four parts of copper, twenty-four parts of tin and eight parts of antimony. For this discovery congress awarded him a gold medal and $20,000. In the broad sense, the term "babbitt," as used today, applies to any mixture of two or more of a number of metals.

There is, however, a great difference between a mixture and an alloy. If, to molten copper, is added lead, properly mixed and cast, the resulting bar of metal will be simply a mixture. The lead is held mechanically between the particles of copper, as water is held in a sponge. But an alloy is a compound of two or more metals and is generally harder than the metal of which it is made, An alloy of tin and antimony has a greater density than the mean density of the two metals that compose it. The same is true of copper and tin. By the density we mean the weight in grams of a cubic centimeter or, in the English system, the weight in pounds of a cubic foot of the substance. For example; a cubic foot of water weighs 62½ pounds, a cubic foot of tin weighs 456¼ pounds, or 7.3 times as much therefore, taking water as a standard, the density of tin is 7.3. The density of antimony is 6.7. The mean density of the two metals is 7.; but the mean density of the alloy is slightly higher. Thus, an alloy will have properties unlike its original metals.

Difference in Melting Points

Further, there is, in many cases, a great difference in the melting points of the elements used in making babbitt. Therefore it is not possible to analyze an alloy or babbitt to determine the exact percentage of original metals.

An all important factor of a uniformly good babbitt is the careful and "just so" method (like the old woman's soap) of manufacturing it. A well made babbitt is worth more than a poorly made one of the same chemical composition.

In the selecting of babbitt for a journal bearing, one must have some general idea of the physical properties of the metals that go to make up the babbitt as well as the use to which it is to be put. For example: a babbitt might prove successful in a heavy, slow running box, that would not be advantageous to use in a high speed bearing.

Lead has a melting point of 334 degrees centigrade, a density of 11.4 and is the most frictionless of all metals used; but it lacks wearing qualities. Copper melts at the high temperature of 1091 degrees centigrade or 1996 degrees Fahrenheit, has a density of 8.8 and is a good conductor of heat. Tin melts at 235 degrees centigrade, has a density of 7.3, very malleable, and a fairly good conductor of heat. Nickel melts at about the same temperature as wrought iron (around 1600 degrees centigrade), has a density of 8.3, very malleable and also ductile, and may be welded at red heat, like wrought iron.

A metal is malleable when it can be hammered into a sheet and ductile when it can be drawn into a wire. Antimony melts at 425 degrees centigrade, its density is 6.7, very brittle and is a bad conductor of heat and electricity. The advantage of antimony in babbitt is its hardness and low melting point. Although nickel melts at a very high temperature, when properly incorporated in a babbitt it makes one of the best hardeners for a high speed metal. Zinc also has a low melting point, namely 433 degrees centigrade, but it is very volatile and brittle at most temperatures, a very volatile metal or one that passes off in the form of vapor when heated, and is not a practical one to be used in a babbitt for most purposes. Aluminum is the lightest of all the metals mentioned, its density is 2.6, melts at 650 degrees centigrade, very malleable, fairly ductile and a good conductor of heat, but shrinks 2¼ per cent. on solidification.

Thus for high speed journals that require a fine degree of adjustment, a tough, malleable babbitt with great wearing qualities is the most commendable.

Simple Tests

Chemical analysis is, of course, the most accurate method to pursue in determining the composition of a babbitt metal, but there are some rough tests that may be applied in any factory or mill where babbitt metal is used. A babbitt drawn across a sheet of white paper will leave a trace if it contains much lead. A bar of copper or nickel hardened babbitt with high percentage of tin, may be bent at nearly right angles before breaking. Lead and zinc both oxidize in the air, thus babbitt containing much of these elements is darker on the outer surface after exposure.

To test for aluminum in a babbitt, melt 10 pounds of copper and add one pound of babbitt in question. If aluminum or even silicon is present the molten metal will have a mirror-like appearance, and when poured into ingot molds, the surface will be smooth and with a deep depression down in the center.

In the absence of aluminum the skimmed surface will be dull, and the top of the ingot will be wrinkled after cooling.

Zinc will show on melting by the blue flame and smoke of oxide. Another test for lead is to take five pounds of copper, one ounce of silicon copper, eight ounces of the babbitt, and cast a bar in sand. If the lead is present, the casting will be covered with a white deposit, like whitewash, due to the presence of both lead and silicon.

EXHIBITORS AT CHEMICAL SHOW

(*Continued from page* 14.)

Arnold, Hoffman & Co. and the Mathieson Alkali Works of Providence occupied a booth together and showed samples of bleaching powder and the other well known lines of chemicals handled by them. The exhibit was in charge of H. H. Hull and A. L. Hayes.

The Universal Fibre Company of Trenton, N. J., showed samples of its seamless pulp packages, containers and shaped articles. by an ingenious process the company is able to make from pulp rectangular and round and curved packages which can be furnished at inexpensive prices and which are adaptable to numerous uses. It is possible to use any fibre that can be used in paper making, and waterproofing compounds can be added so that the articles will hold water without any application of paint, etc. The company will manufacture some of the articles itself and will sell rights to manufacture under its patents to other concerns. The exhibit was in charge of D. M. Sutherland, vice-president of the Universal Fibre Company.

The Union Sulphur Company, New York, showed no samples but occupied a booth at which it welcomed its customers and friends in the trade. The company was represented by W. N. Wilkinson, assistant secretary and sales manager of the company.

The Westinghouse Electric & Manufacturing Company of Pittsburgh showed samples of its motors best adapted for use in chemical plants and also had constantly present well informed salesmen who explained to all interested the company's numerous motors specially built for use in paper and pulp mills. The exhibit was in charge of Messrs. Loomis, Hegarty, O'Neil, Lupinski, Ward, Carrier, Gibson, White, Goldsborough, Carpenter and Gerry.

The PAPER TRADE JOURNAL, the international weekly of the paper and pulp industry, occupied a cosey booth on the mezzanine floor where numerous members of the trade were entertained during the week of the show. The booth of the PAPER TRADE JOURNAL was in charge of A. L. Tanyane, advertising manager, and William Karpen, assistant advertising manager of the Lockwood Trade Journal Company.

Average run in tons per month 708
Cost of wire per ton .259
Kind of paper made Hanging

Compare the above record made by an "Ideal" Fourdrinier, 90 inch, for the last year with any other Fourdrinier of this size. Note the great production and the low cost of wire per ton. It is certified to by the user of the machine.

Paper makers used the old style Fourdrinier part with its shake frame supported on movable side posts, and with its other many structural defects for so many years that it became almost second nature to consider such a faulty and unsatisfactory machine a necessary evil. They were able to make paper with it, and although the time lost in repairs and the sum spent in replacing parts, ate a larger and larger hole in profits every month of every year after a machine was installed, they put up with it because nothing better was offered, much as people put up with the stage coaches, once-a-week mail delivery, and no telephone or telegraph until better things were offered.

The Ideal Fourdrinier was designed to eliminate the glaring defects of the old style machine.

It accomplished its purpose.

Send coupon for bulletin on the "Ideal" Fourdrinier.

The Sandy Hill Iron & Brass Works

Hudson Falls, N. Y.

The
Sandy Hill
Iron & Brass Works
Hudson Falls, N. Y.
Send Bulletins describing
Ideal Fourdrinier.

Name .....

Address .....

NEW DEPARTURE IN SELLING FLAT WRITING PAPERS

New Orders for Bonds and Linens, Flat Writings and Ledgers Will Be Entered and Manufactured Only in Conformity to List of Substance Numbers and Conditions Appended Thereto Just Compiled and Adopted by the Writing Paper Manufacturers' Association—List Not Yet Complete, as Additional Sizes Will Have to Be Added for Loose Leaf Work.

The Writing Paper Manufacturers' Association has adopted the following trade custom No. 19, effective on and after October 1, 1916:

New orders for Bonds and Linens, Flat Writings and Ledgers will be entered and manufactured only in conformity to the following list of Substance Numbers and to the conditions appended thereto:

TABLE SHOWING ACTUAL WEIGHTS (FIGURED TO ½ LB.) OF STANDARD SUBSTANCE NUMBERS

SIZE.	SUBSTANCE.								
	No. 13	No. 16	No. 20	No. 24	No. 28	No. 32	No. 36	No. 40	No. 44
14 x 17.....	8.5	10.	12.5	15.5	18.	20.5	23.	25.5	28.
14 x 34.....	16.5	20.5	25.5	30.5	35.5	40.5	46.	51.	56.
15 x 19.....	10.	12.	15.	18.5	21.5	24.5	27.5	30.5	33.5
16 x 21.....	11.5	14.5	18.	21.5	25.	28.5	32.5	36.	39.5
16 x 26.....	14.5	18.	22.	26.5	31.	35.5	40.	44.5	49.
16 x 42.....	23.5	29.	36.	43.	50.5	57.5	64.5	72.	79.
17 x 22.....	13.	16.	20.	24.	28.	32.	36.	40.	44.
17 x 26.....	15.5	19.	23.5	28.5	33.	38.	42.5	47.5	52.
17 x 28.....	16.5	20.5	25.5	30.5	35.5	40.5	46.	51.	56.
17 x 44.....	26.	32.	40.	48.	56.	64.	72.	80.	88.
17 x 56.....	33.	40.5	51.	61.	71.5	81.5	91.5	102.	112.
18 x 23.....	14.5	17.5	22.	26.5	31.	35.5	40.	44.5	48.5
18 x 46.....	29.	35.5	44.5	53.	62.	71.	79.5	88.5	97.5
19 x 24.....	16.	19.5	24.5	29.5	34.	39.	44.	49.	53.5
19 x 26.....	17.	21.	26.5	31.5	37.	42.5	47.5	53.	58.
19 x 28.....	18.5	23.	28.5	34.	40.	45.5	51.	57.	62.5
19 x 30.....	20.	24.5	30.5	36.5	42.5	49.	55.	61.	67.
19 x 48.....	31.5	39.	49.	58.5	68.5	78.	88.	97.5	107.5
20 x 28.....	19.5	24.	30.	36.	42.	48.	54.	60.	66.
20 x 56.....	39.	48.	60.	72.	84.	96.	108.	120.	132.
21 x 32.....	23.5	29.	36.	43.	50.5	57.5	64.5	72.	79.
21 x 33.....	24.	29.5	37.	44.5	52.	59.5	66.5	74.	81.5
22 x 25½....	19.5	24.	30.	36.	42.	48.	54.	60.	66.
22 x 34.....	26.	32.	40.	48.	56.	64.	72.	80.	88.
23 x 28.....	22.5	27.5	34.5	41.5	48.	55.	62.	69.	76.
23 x 31.....	26.	30.5	38.	45.5	53.5	61.	68.5	76.	84.
23 x 34.....	27.	33.5	42.	50.	58.5	67.	75.5	83.5	92.
23 x 36.....	29.	35.5	44.5	53.	62.	71.	79.5	88.5	97.5
24 x 38.....	31.5	39.	49.	58.5	68.5	78.	88.	97.5	107.5
24 x 48.....	40.	49.5	61.5	74.	86.	98.5	111.	123.	135.5
26 x 32.....	29.	35.5	44.5	53.5	62.5	71.	80.	89.	98.
26 x 33.....	30.	36.5	46.	55.	64.	73.5	82.5	92.	101.
26 x 34.....	30.5	38.	47.5	56.5	66.	75.5	85.	94.5	104.
26 x 38.....	34.5	42.5	53.	63.5	74.	84.5	95.	105.5	116.5
27 x 40.....	37.5	46.	58.	69.5	81.	92.5	104.	115.5	127.
28 x 34.....	33.	40.5	51.	61.	71.5	81.5	91.5	102.	112.
28 x 38.....	37.	45.5	57.	68.5	79.5	91.	102.5	114.	125.
28 x 40.....	39.	48.	60.	72.	84.	96.	108.	120.	132.
28 x 42½....	41.5	51.	63.5	76.5	89.	102.	114.5	127.5	140.
30 x 38.....	39.5	49.	61.	73.	85.5	97.5	109.5	122.	134.
31 x 53.....	57.	70.5	88.	105.5	123.	140.5	158.	175.5	193.5
34 x 44.....	52.	64.	80.	96.	112.	128.	144.	160.	176.

Reams will be stenciled with their respective Substance Numbers, but will temporarily also carry the nearest substance ream weight and be sold as such.

NOTES: Applying to rule No. 19.

(*a.*) Intermediate Substance Numbers carry same ream price as next higher number. Trade Custom Number 17 governs on Substances below Number 16.

(*b.*) Trade Custom Number 1 governs on Odd sizes.

In connection with the adoption of this new trade custom, E. H. Naylor, secretary, has sent out the following announcement:

TO THE TRADE:

To assist buyers of bonds and linens, flat writings and ledger papers in making out specifications, for their needs, which will conform to the new plan of manufacturing to standard substance numbers, the lists herewith have been compiled.

The list is not yet complete. Additional sizes will have to be added to fit loose leaf ledger work. Other sizes may also be added from time to time.

The substance numbers mean pounds to 17 x 22; i.e., 17 x 22—No. 13 is 13 lb. Folio; No. 16 is 16 lb. Folio; No. 20 is 20 lb. Folio; and so on throughout the list to No. 44, which is 44 lb. Folio.

The number in any other size is to the Folio basis; i.e., 17 x 28—No. 28 is 28 lb. Folio basis (actual weight 35.5 lbs.); 19 x 24—No. 16 is 16 lb. Folio basis (actual weight 19.5).

Soon numbers will have become as familiar to the mind as weights, but until that time it will be well for the buyer to consult the weight schedule on the opposite page in making out specifications. That is to say, if you have been buying 17 x 28—36 lb., find the nearest weight in the table, which is 35.5 lbs. and order No. 28; or if you have been buying 19 x 24—20 lb. the nearest weight is 19.5 lbs., order No. 16.

In ordering odd sizes all that is necessary is to determine the Folio basis desired; then specify this Folio basis; i.e., substance number together with the size of the sheet wanted and the number of reams required.

Yours very truly,

WRITING PAPER MANUFACTURERS' ASSOCIATION,
18 East Forty-first Street, New York, N. Y.
E. H. NAYLOR, Sec. & Treas.

Wife of Pittsburgh Paper Dealer Killed

PITTSBURGH, Pa., September 26, 1916.—One of the most distressing automobile accidents of the year occurred on Monday, September 18, when Mrs. Minnie Seager, wife of Mr. Percy R. Seager, of Seager Brothers, was killed about eighteen miles west of Erie, when her automobile was struck by a through train on a railroad crossing while returning from their country home to Pittsburgh.

Mrs. Seager was accompanied by her sister and niece and chauffeur, and the entire party were killed instantly by the collision.

Upon learning of the accident, the Pittsburgh paper dealers called a meeting of their organization and sent the enclosed letter to Mr. Seager:

Having learned with profound sorrow of the bereavement of our esteemed friend and associate, Mr. Percy R. Seager, and desiring to preserve in permanent form a record of our sincere sympathy for him at this trying time,

We have this date, by vote in meeting assembled, directed that this letter be engrossed and sent to him.

BALTER PAPER COMPANY, BEESON PAPER COMPANY, GENERAL PAPER & CORDAGE COMPANY, HARTJE PAPER MANUFACTURING COMPANY, HUFF, BARNES & OPIE, INC., INTERSTATE CORDAGE & PAPER COMPANY.

Lists of wholesale buyers of fruit paper and paper bags and of commission houses dealing in both classes of merchandise in the Canary Islands have been forwarded from Teneriffe by Consul G. K. Stiles. Copies may be obtained from the Bureau of Foreign and Domestic Commerce, Washington, D. C., its district or co-operative offices. Refer to file No. 79161.

"IMPROVED" KNOTTER

for the first screening of sulphite, sulphate or ground wood pulp.

We shall be glad to furnish data and samples of the work this machine will do in actual use.

The cost of power and upkeep is extremely small and the results are very satisfactory.

Knotter Design No. 2

WE ASK A THOROUGH INVESTIGATION

IMPROVED PAPER MACHINERY CO.

NASHUA, N. H., U. S. A.

REVERE RUBBER COMPANY

Manufacturers of

All Kinds of Rubber Goods

Used in Paper and Pulp Mills

RUBBER COVERED ROLLS and recovering
BELTING, HOSE, PACKINGS, VALVES, APRONS, DECKLE STRAPS, ETC.

Works: Chelsea, Mass., and Providence, R. I. *Branches:* Boston, New York, Philadelphia, Pittsburgh, Chicago, Minneapolis, New Orleans, Kansas City, Mo., San Francisco, Portland, Ore.

WRITE FOR PRICES AND SAMPLES

BIG PAPER MILL FIRE AT PHOENIX, N. Y.

The New Paper Mill of the Burrows Paper Company Destroyed—The New Addition to the Mill of the Sweet Brothers Manufacturing Company Also Wiped Out, and Considerable Damage Done by Water—The Old Part of the Mill Will Be Started in a Few Days—The Plant of the Crescent Paper and Machine Company Had Narrow Escape.

[FROM OUR REGULAR CORRESPONDENT.]

FULTON, N. Y., Sept. 25, 1916.—Fire broke out in the village of Phœnix, ten miles south of here, late last Saturday night and practically the entire business section was destroyed before the fire was under control Sunday morning.

Burrows New Mill Destroyed

The new plant of the Burrows Paper Company was totally destroyed. This company was organized early in the year and the plant was just being completed preparatory to starting the manufacture of paper next month. The loss is partly covered by insurance.

Sweet Brothers' Mill Damaged

The new part of the Sweet Bros. Paper Company's plant was destroyed and considerable damage was suffered from water, loss of paper, etc., but it will be possible to start the mill again in a few days.

Crescent Plant Had Narrow Escape

The plant of the Crescent Paper & Machine Co., situated just north of Sweet Bros., escaped with practically no damage.

Help was sent to the village from Syracuse, Oswego and Fulton but the fire had gained such headway that it could not be stopped until the next morning after hundreds of buildings had been burned. TIL.

Meeting of Writing Paper Manufacturers

NIAGARA FALLS, N. Y., Sept. 25, 1916.—Thirty prominent representatives of the writing paper-making industry from various parts of the United States held a meeting at the International hotel here last Monday and Tuesday. It was the annual trade meeting of the Writing Paper Manufacturers' Association, and was held behind closed doors. Arthur C. Hastings of Holyoke, Mass., a former mayor of this city, presided, and E. H. Naylor of New York was secretary. Secretary Naylor stated that there was nothing for publication done at the two days' session. LO.

Calls for Canadian Tonnage

[FROM OUR REGULAR CORRESPONDENT.]

OTTAWA, Ont., Sept. 26, 1916.—According to an item which has crept into the Trade and Commerce Department of Canada, paper beds, with paper sheets and paper pillow cases are now being used in Germany by the poor. The material for mattresses and bedding has become so dear that it is impossible for any but the comparatively rich to afford them. The mattresses are now made of strong sheets of paper pasted together and filled with dried leaves of beach and oak trees. The paper used is toughened by a special process which prevents its being torn easily.

A group of South African newspapers have applied to the Trade and Commerce Department for samples and prices of newsprint in regular supplies. They are large buyers of paper, both reels and flat. The buying will be done in the usual manner through the London office of the concern.

A firm at Bristol, Eng., has asked the Canadian Trades and Commerce Department for quotations for a contract on woodpulp board. They desire the board to be 40 inches by 45 at about 180 sheets to the British cwt., and ask for 100 to 150 tons a year, delivered ten tons per month.

A Glasgow, Scot., firm states that a large demand exists there for straw-boards, leather-boards and pulpwood-board. They have forwarded samples to the Department of Trade and Commerce at Ottawa for quotations.

Two Russian firms have asked the Dominion Trade and Commerce Department for quotations for writing papers for commercial purposes. They prefer white and light blue colors. Quotations for quantities c.i.f. Vladivostok, desired. They sent samples with their request. W. M.

Imports of Pulp and Paper for July, 1916

The statement of imports of pulp, wrapping paper and printing paper for July, 1916, as issued by the Department of Commerce, is as follows:

WOOD PULP.

	Mechanically Ground		Chemical, Unbleached		Chemical, Bleached	
Countries—	Tons	Dollars	Tons	Dollars	Tons	Dollars
Norway	...	...	...	...	1,877	105,830
Sweden	...	...	12,473	587,053	1,205	84,610
Canada	18,749	331,165	13,643	712,852	534	40,750
Newfoundland	...	...	72	3,948	...	...
Total	18,749	331,165	26,188	1,303,853	3,616	231,190
Districts—						
Maryland	...	...	3,934	185,987	722	44,209
Massachusetts	...	...	3,021	145,600	990	52,968
New York	...	...	2,112	102,791	1,035	71,293
Philadelphia	...	...	3,377	148,737	115	7,171
New Orleans	...	...	100	7,858	...	...
Washington	...	...	224	11,315	...	...
Buffalo	2,891	52,181	689	38,446	...	...
Michigan	5,103	88,914	3,425	200,339	...	...
St. Lawrence	5,698	96,364	2,949	143,314	...	...
Vermont	4,331	80,104	5,656	290,641	...	...
Other districts	726	13,602	701	28,825	754	55,549
Total	18,749	331,165	26,188	1,303,853	3,616	231,190

PRINTING PAPER FOR BOOKS AND NEWSPAPERS.

Countries—	Pounds	Dollars
France	13,342	1,711
England	11,628	3,700
Canada	80,252,960	1,535,878
Total	80,277,930	1,541,289

WRAPPING PAPER.

Countries—	Pounds	Dollars
Spain	89,941	3,863
Sweden	478,699	12,677
England	2,132	231
Scotland	5,535	436
Canada	56,333	2,702
Japan	960	58
Total	633,600	19,967

Loomis Mill Starts

FERNANDINA, Sept. 11, 1916.—The new paper mill of the Loomis Company at St. Mary started work this morning to manufacture paper from rushes found along the salt marshes of the rivers near here.

By this process it is claimed that paper can be made from cotton stalks, palmetto stems and fiber and many of the nitro cellulose plants from which paper could not be made in a practical way heretofore. This new business promises to be a large one, for with the patented process it is claimed that many fine fabrics and textiles can be made from banana leaves and stalks which will be imported from the West Indies and Central America. Even from the rushes that grow on the marsh there will be an enormous business.

George P. Mackie, formerly manager of Perkins & Butler, has joined the sales force of the Charles A. Esty Paper Co., Worcester, Mass.

New York Color and Chemical Co.

212 PEARL STREET :: :: :: :: :: NEW YORK

HEADQUARTERS FOR

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GENUINE---NOT A SUBSTITUTE

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Make That Bundle Secure

so secure as to insure its arrival at destination in same condition as when it left your plant.

COLUMBIAN and EUREKA Commercial Twines

are made from Hemp, Jute or Flax, with the skill and care which gives to Quality its real meaning.

COLUMBIAN—is our first Quality—no better grade is made.
EUREKA—second to Columbian in quality, is superior to many twines offered as "first quality."

A trial order will convince you that the better twines—those on which you can depend—those of uniform quality are manufactured by

COLUMBIAN ROPE COMPANY

2250-2275 Genesee St. AUBURN, N. Y. "The Cordage City"

NEWS PRINT PRODUCTION FOR AUGUST

The Figures as Issued by the News-Print Manufacturers Association—Stocks Continue to Decline, and Now Lowest in the Year for Both United States and Canadian Mills, the Combined Stocks Showing a Loss of Over 30,000 Tons as Compared with the Combined Stocks in August, 1915—Production Continues High.

G. F. Steele, the secretary of the News-Print Manufacturers Association has sent out figures as to the production, shipments and stocks of news-print for the month of August. The statement, which is as follows, is decidedly interesting:

PRODUCTION AND SHIPMENT REPORT FOR MONTH OF AUGUST.

	Days	Companies Reporting	PRODUCTION Maximum in Tons Per Month	PRODUCTION Maximum in Tons Per Day	PRODUCTION Actual in Tons Per Month	PRODUCTION Actual in Tons Per Day	Per Cent. of Maximum	SHIPMENTS Total Tons During Month	SHIPMENTS Per Cent. of Maximum	Total Stocks On Hand at All Points
UNITED STATES.										
1915—Year Average	..	33	1,232,560	3,976	1,001,662	3,231	81.2	1,031,832	83.7	54,592
1915—August	26	33	102,908	3,958	83,966	3,229	81.5	80,075	77.8	67,014
1916—January	26	32	101,166	3,891	88,522	3,405	87.5	88,461	87.4	54,255
February	25	32	97,275	3,891	82,566	3,303	84.4	81,712	83.5	55,616
Two Months	51	..	198,441	3,891	171,088	3,355	86.2	170,173	85.7	.....
March	27	32	105,057	3,891	91,110	3,375	86.7	96,305	91.6	51,523
Three Months	78	..	303,498	3,891	262,198	3,362	86.3	266,478	87.8	.....
April	25	32	97,275	3,891	87,860	3,514	90.3	96,088	98.7	44,232
Four Months	103	..	400,773	3,891	350,058	3,398	87.3	362,566	90.4	.....
May	27	32	105,057	3,891	96,224	3,564	91.5	95,930	91.3	46,188
Five Months	130	..	505,830	3,891	446,282	3,433	88.2	458,496	90.6	.....
June	26	31	99,996	3,846	94,361	3,629	94.3	97,582	97.5	44,310
Six Months	156	..	605,826	3,883	540,643	3,466	89.2	556,078	91.7	.....
July	25	31	96,150	3,846	86,321	3,453	89.7	89,997	93.5	40,961
Seven Months	181	..	701,976	3,878	626,964	3,464	89.3	646,075	92.0	.....
August	27	31	103,842	3,846	92,978	3,444	89.5	93,672	90.2	40,461
Eight Months	208	..	805,818	3,874	719,942	3,461	89.3	739,747	91.8	.....
CANADIAN MILLS.										
1915—Year Average	..	11	503,285	1,624	428,858	1,383	85.2	428,821	85.2	25,898
1915—August	26	11	45,136	1,736	37,642	1,448	83.3	34,815	77.1	32,778
1916—January	25	12	43,950	1,758	41,817	1,673	95.1	37,944	86.1	29,831
February	25	12	43,950	1,758	41,833	1,673	95.1	41,244	93.8	30,485
Two Months	50	..	87,900	1,758	83,650	1,673	95.1	79,188	90.0	.....
March	27	12	47,466	1,758	45,396	1,681	95.6	46,902	98.8	28,979
Three Months	77	..	135,366	1,758	129,046	1,676	95.3	126,090	93.1	.....
April	25	12	43,950	1,758	41,572	1,663	94.5	46,785	106.4	23,766
Four Months	102	..	179,316	1,758	170,618	1,672	95.1	172,875	96.4	.....
May	27	12	48,627	1,801	47,048	1,743	96.7	48,006	98.7	22,824
Five Months	129	..	227,943	1,767	217,666	1,687	95.4	220,881	96.9	.....
June	26	12	46,826	1,801	45,790	1,761	97.7	47,847	102.1	20,767
Six Months	155	..	274,769	1,773	263,456	1,700	95.8	268,728	97.8	.....
July	25	12	45,275	1,811	43,856	1,754	96.8	42,487	93.8	22,136
Seven Months	180	..	320,044	1,778	307,312	1,707	96.0	311,215	97.2	.....
August	27	12	48,897	1,811	43,559	1,613	89.0	44,470	90.9	21,235
Eight Months	207	..	368,941	1,782	350,871	1,695	95.1	355,685	96.4	.....
UNITED STATES AND CANADIAN MILLS.										
1915—Year Average	..	44	1,735,845	5,600	1,430,520	4,615	82.4	1,460,653	84.1	80,490
1915—August	..	44	148,044	5,694	121,608	4,677	82.1	114,890	77.6	99,792
1916—January	..	44	145,116	5,649	130,339	5,078	89.8	126,405	87.1	84,086
February	..	44	141,225	5,649	124,399	4,976	88.0	122,956	87.0	86,101
Two Months	..	..	286,341	5,649	254,738	5,028	88.9	249,361	87.0	.....
March	..	44	152,523	5,649	136,506	5,056	89.4	143,207	93.8	80,502
Three Months	..	..	438,864	5,649	391,244	5,039	89.1	392,568	89.4	.....
April	..	44	141,225	5,649	129,432	5,177	91.6	142,873	101.1	67,998
Four Months	..	..	580,089	5,649	520,676	5,070	89.7	535,441	92.2	.....
May	..	44	153,684	5,692	143,272	5,307	93.2	143,936	93.6	69,012
Five Months	..	..	733,773	5,658	663,948	5,120	90.4	679,377	92.5	.....
June	..	43	146,822	5,647	140,151	5,390	95.4	145,429	99.0	65,077
Six Months	..	..	880,595	5,656	804,099	5,166	91.3	824,806	93.6	.....
July	..	43	141,425	5,657	130,177	5,207	92.6	132,484	93.6	63,097
Seven Months	..	..	1,022,020	5,656	934,276	5,171	91.4	957,290	93.6	.....
August	..	43	152,739	5,657	136,537	5,057	89.3	138,142	90.4	61,696
Eight Months	..	..	1,174,759	5,656	1,070,813	5,156	91.1	1,095,432	93.2	.....

Meeting of Specification Committee

[FROM OUR REGULAR CORRESPONDENT.]

WASHINGTON, D. C., September 25, 1916.—The initial meeting of the specification committee for drawing up the requirements of the Government Printing Office for the coming fiscal year will be held here on Thursday of this week. The meeting will be in the nature of an organization meeting, when the chairman of the committee will be elected and other initial work will be taken up.

It is understood that one of the questions to be taken into consideration will be whether or not paper manufacturers will be invited to attend a conference or hearing to be held, at which time the paper men would be given an opportunity to make such suggestions as they saw fit. It may be remembered that such a hearing was held by the committee several years ago at the Bureau of Standards which, at that time, did much good.

The committee consists of the following: Captain Henry T. Brian, Deputy Public Printer; T. Frank Morgan, assistant superintendent of work of the Government Printing Office; F. P. Veitch, chief of the paper laboratory of the Bureau of Chemistry; F. C. Clark, chief of the paper laboratory of the Bureau of Standards; B. D. Dyas, inspector of the Joint Congressional Printing Committee, and George H. Carter, clerk of the committee.

The Westfield Paper Company, which was organized recently to operate the old mill of the Russell Falls Paper Company at Russell, Mass., has opened a local sales office at 50 East Forty-second Street, where James S. Alexander and Edward P. Holden are in charge. The mill is expected to be in operation in five or six weeks, but orders for its product of glassine paper will be taken at the New York office beginning some time next week.

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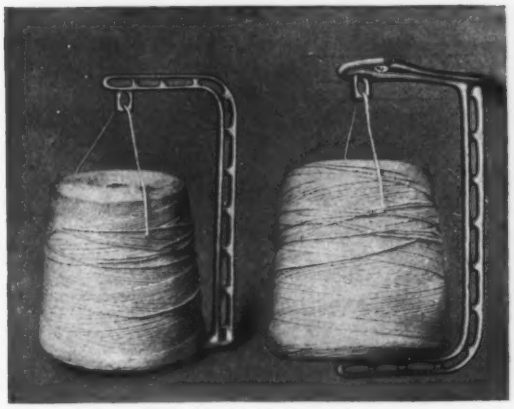
ONE DOZEN TO CARTON



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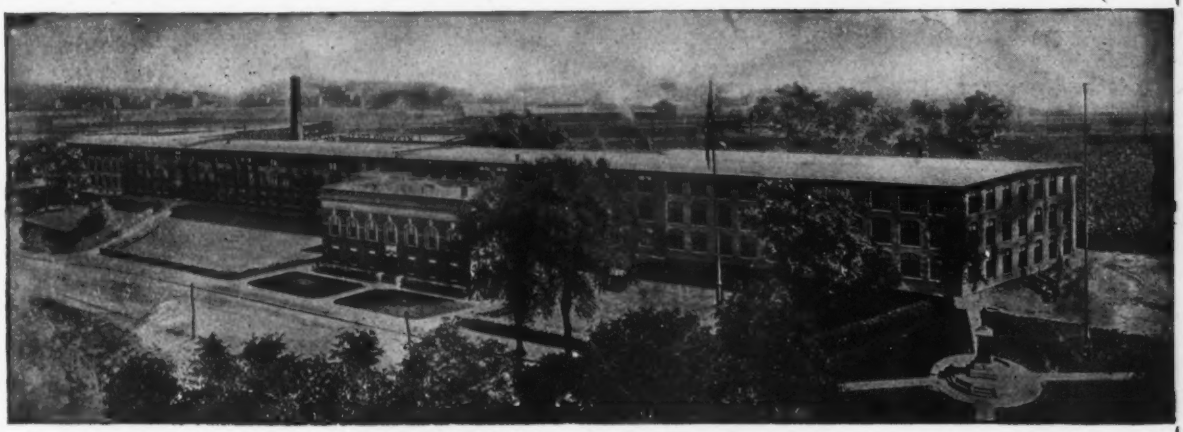
EVERETT STA., BOSTON.

CHICAGO, 37 N. Market St. NEW YORK, 19 Warren St.

F. C. HUYCK & SONS ALBANY, N. Y.



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Seamless Felts both for high speed machines and fine papers.

LABOR TROUBLES IN THE PAPER INDUSTRY

Strike at S. D. Warren & Co.'s Mills Continues—Girls Join in the Strike—Notice by Company to Employees—Mayor Trafton's Efforts to Settle the Difficulty—Strike at the Thames River Specialties Company's Plant at Montville, Conn.—Strikers' Places Have Been Filled—Conjecture as to the Cause of the Strike.

[FROM OUR REGULAR CORRESPONDENT.]

WESTBROOK, Me., September 20, 1916.—Nearly 1,000 strikers of the S. D. Warren & Co. of Boston paper mill force paraded last night, 36 girls of the union having the right of line. There was much interest in the demonstration as it extended through both the East and West End of the city. There was an outdoor meeting at Riverbank Park, where speeches in both English and French were delivered.

Miss Marion Hannah, one of the union girls, gave a spirited address, urging peaceful efforts by her associates to induce girls who are still working to quit their jobs. Henry Theriault of the Carpenters' Union of Portland and Charles Roux spoke in French and urged all operatives of that extraction to stick by their English-speaking fellow workmen. All the speakers counseled moderation and toleration and urged the union men to avoid any clash with officers of the law or of the mills.

Agent Warren does not officially admit that a strike exists, but says a formal admission will be forthcoming to-day if the following notice is not productive of resuming full time and practically a full crew:

"Cumberland Mills, Sept. 19, 1916.

"All employees must notify us before noon of Wednesday, Sept. 20, of their willingness to work in order to avoid being listed as strikers. JOSEPH A. WARREN, mill manager."

Mayor Trafton Hopes for Settlement

Mayor Trafton told newspapermen to-night that he hopes to be able to bring the factions together before long and attempt an adjustment of the controversy. There are fears that the business of the city will be injured seriously, and that many of the expert paper makers, citizens of long residence in the city, will remove elsewhere if the strike is prolonged. M. H. Parker, representing the brotherhood, went to Yarmouth to-night to confer with union officials there relative to the advisability of ordering the crew out there. Similar action affecting the Gardiner mill is under consideration.

Agent Warren says about 700 are still at work, though these figures are scouted by union officials. He says six machines are in operation, and lack of stock explains why more are not in motion.

Strike at Thames River Specialties Co.

NORWICH, Conn., September 24, 1916.—A week ago last Friday the employees of the Thames River Specialties Company at Montville, Conn., went out on a strike for higher wages and an 8-hour day. This was not expected by the company, as it had advanced the wages of the men last winter as the result of a strike. The company is paying good wages and feels that it cannot at present consent to a further increase or an eight-hour day at the present wage scale, and has so notified the help. Some strikers have returned, and the vacancies remaining have been filled by strike breakers from out of town who arrived last Monday. A large force of uniformed special deputies are guarding the plant. Attempts have been made by the strikers to attack the cars which are used to convey the strikers to the mill but no serious damage has resulted as yet.

A mass meeting of the paper mill employees in this section was held in Carpenters' hall on Sunday, 17th, and the foundation of a papermakers' union to be known as the Thames river local, were laid.

Addresses were made to a large audience of the mill men by Jacob Stevens, of the International Brotherhood of Papermakers, and Joseph Tylkoff, of the American Federation of Labor.

Just why the trouble should start in the Thames river specialties plant is not clear, as there are six mills within a few miles of Montville which do not seem to be having any labor troubles, and the Thames river plant is paying the highest wages. C.

Settling Strike Troubles at Appleton

[FROM OUR REGULAR CORRESPONDENT.]

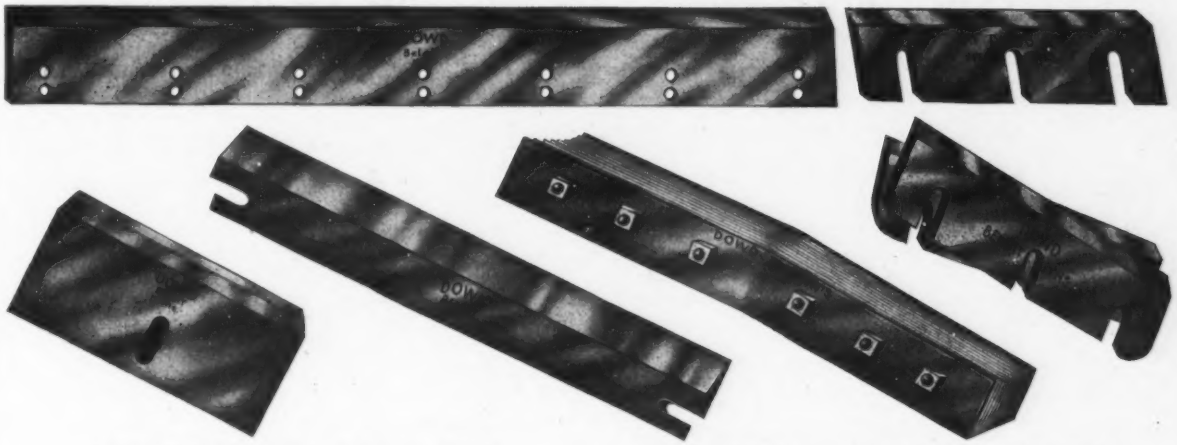
APPLETON, Wis., Sept. 26, 1916.—Not a single instance of personal violence occurred here last week as a result of the paper mill strike, the only act of vandalism being that on Thursday night when at the midnight hour someone hurled a brick through a large plate glass window at the home of Charles Brockman, employee of the Interlake Pulp and Paper Company. The authorities are at work on the case, but as yet have no clue.

Peter Larsen, slugged employee of the Interlake Company, a few days ago served written notice upon the mayor and city authorities that if he is assaulted again he will hold the city liable for damages. Mayor Knuppel last week gave the police department to understand there will no longer be tolerated any "winking at" violence committed by strikers or their sympathizers.

Several conferences were held during the last week, the last one being on Friday night when the strikers at the Riverside Paper & Fibre Company conferred with the mayor in an effort to devise some common grounds on which the strikers and the company can get together. Reports today are to the effect that the next few days might see things clarified so far as the Riverside Company is concerned. The company is willing to treat with its men individually, but refuses absolutely to deal with them as representatives of the union. It is believed there are enough of the strikers at that plant who wish to return to work that their influence with the unmarried and more or less irresponsible strikers will result in a general return to work. The same condition seems to be in prospect at the Interlake plant.

The strikers have been alert at the latter plant, evidently with a view to bringing action against the company for violation of the child labor law. Finally they seem to have secured grounds for action, for within the last few days they have caused the attorney general at Madison and the state industrial commission to proceed, bringing five counts against the company for alleged employment of help under sixteen years of age. It seems that at some time or other during the last four months, since the strike was called, the company has had on its payroll two boys a few months under sixteen years of age. Both were given permission to work by the parents and the company had light work to do. And now come the union men with formal complaints for the prosecution of the company. The case will probably never even as much as go to court.

"If the strike is not settled by the time my job here comes to an end, I'm going back to work at the Interlake, if they'll take me back," declared one man to the writer. This man, like many others of the strikers, is at present employed with a crew of concrete road builders in this county. It is said that most of the men thus engaged will seek to return to their work in the mills when the outdoor work closes for the season. S.



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In our Bars and Plates are represented sixty-nine years of experience, research and practice, combined with skilled workmanship and scientific methods.

This should assure you as to our ability to supply you with Bars and Plates of the quality best adapted to your requirements.

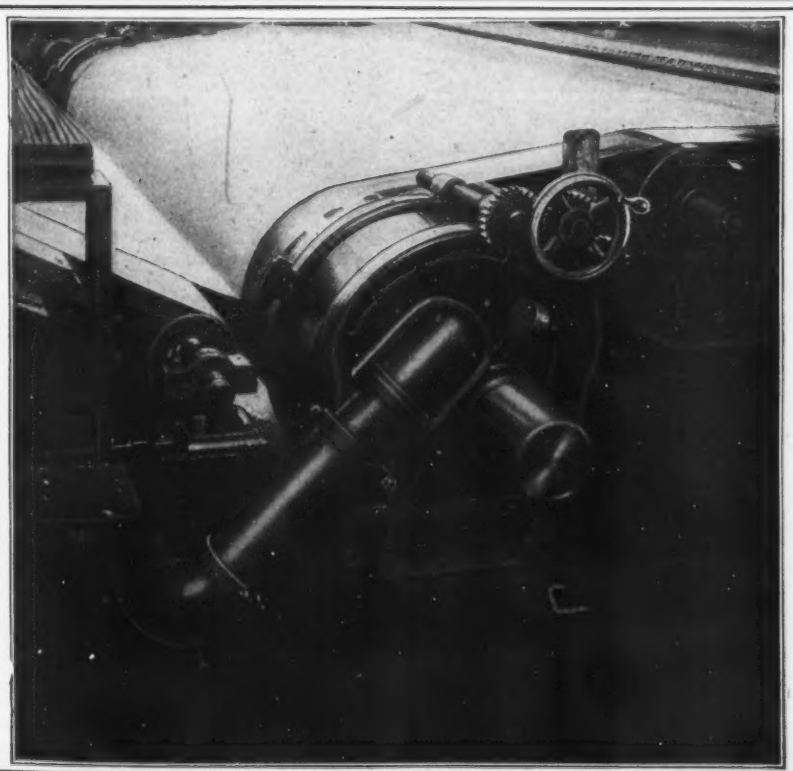
EVENNESS OF TEMPER IN KINVES

In our Knives we employ Swedish Electro Steel, because the ore from which it is made is of such great natural purity that the body formation of this steel is absolutely uniform and free from imperfections.

This enables us to impart to the cutting edges a temper that is perfectly even—no hard or soft spots.

R. J. DOWD KNIFE WORKS

ESTABLISHED 1847 BELOIT, WISCONSIN, U. S. A.



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No separate internal suction box.

Speed can be increased on either light or heavy weights and a more uniform and stronger sheet produced than can be made with couch rolls.

Roll can be connected to your present drive, no special back gearing being necessary.

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Leading Builders of Paper Mill Machinery

FURTHER EXTENSION OF CANADA'S INDUSTRY

An Eastern Ontario Syndicate Will Build a Pulp Mill at Port Arthur—The First Unit of 50 Tons Will Be in Operation by Next June—What the Canadian Bank of Commerce Has to Say About Paper and Pulp—Shortage of News-print Necessitates the Strictest Economy by Publishing Concerns—Serious Scarcity of Labor in Lumber Camps.

[FROM OUR REGULAR CORRESPONDENT.]

MONTREAL, Que., Sept. 25, 1916.—Still the story of the extension of Canada's pulp and paper industry goes on. Today it is announced that an Eastern Ontario syndicate will start work immediately on the erection of a pulp mill at Port Arthur, Ont., which will have a capacity of 150 tons per day. The first unit of 50 tons will be operating by next June. An agreement has been signed with the city of Port Arthur by which the company will buy its power from the municipality and receive its site from the city. This site is on the north water front, so that the company will have the advantage of transportation on the Great Lakes for the marketing of its products.

Canadian Bank of Commerce on Situation

The Canadian Bank of Commerce, which has branches in every community of importance in Canada, and which is the second largest bank in the Dominion, has devoted the current number of its monthly Commercial Letter to the pulp and paper situation. In the course of this letter the following interesting statements are made: "Although pulp and paper mills in Canada have for some time been operating at full capacity, stocks of news-print are decreasing. Prices of raw and partly manufactured materials for paper-making are very much higher than they were a year ago, the causes being chiefly the increase in the cost of production, and the greater demand, particularly from the United States. Last year the cut of wood for pulp was far below normal which has resulted in a shortage at a time of increased demand and increased cost. A year ago raw pulpwood could be purchased in Northern Ontario at $4 a cord, whereas this year the price is $5.25 and higher. While the most important factor in the increased cost of pulp is the increase in the cost of labor, the difficulty in procuring chemicals is also a contributory item. Up to the present the output of Canadian paper mills has not been checked by these factors, but during the summer fires and floods have caused some slight loss and interruption, although not to an appreciable extent. Contracts made during the early part of the year or previously, are being filled, but there is a decided reluctance to contract far ahead even at prevailing high prices. Additional increases in the cost of production are feared, and the demand for pulp and news-print will doubtless continue. The new mills planned and in course of construction, and the extensions to existing ones, will, if carried out as intended, add a per-diem capacity of 840 tons of news-print before the end of 1918. During the 12 months ending March last, the amount of printing paper exported was 463,204 tons, or at the rate of 1,544 tons per day, as compared with a tonnage of 292,579, or 975 tons per day in the corresponding period ending March, 1914. In the export of and demand for wrapping paper there are also similar developments, and these, even before the outbreak of the war, attained considerable proportions as shown in the accompanying diagram.

"Raw material for paper-making is abundant in Canada and most of it lies near water-ways by which it may be assembled at points combining manufacturing and transportation facilities. During recent years our new transcontinental lines have been constructed through vast areas of forest, which are thus rendered available and their value is now being realized. This is indicated by the demand for lands which were offered a year ago at $1,000 per square mile, but are now being sold or held firmly at twice that figure. The continued demand for paper and pulp-wood cannot but greatly increase the value of one of the greatest of our national resources."

In connection with the latter point it may be stated that timber limits which have been open for sale for years have all been withdrawn from the market, the Canadian owners hoping to reap the benefit of the present high prices when a bona fide purchaser comes along.

The Shortage of News-print

The shortage of newsprint is necessitating the most urgent economy in the use of paper by the publishing companies of the Dominion. Quite a number of papers have cut down their size and increased the subscription rates, and further measures to this end are being considered. The cost of labor and materials have gone up so high, and the demand has shown such a marked increase that the general opinion is that the cost of news-print will never again recede to anything like the levels prevailing in 1915. That does not mean that the prices are expected to remain permanently at the present high figure, although no prospect whatever appears of relief from these prices in the near future. Practically all the publishers with whom the news-print mills have contracts are asking for more paper than their contracts call for, and the mills are unable to supply the extra tonnage, even though they are operated for 24 hours six days in the week. Most of the mills are away behind on their orders. For instance, the Laurentide Company is writing in answer to inquiries, that "It is not possible for us to take on any extra business at present. We are so far behind on orders that we have on hand that it will take us some months to get into shape." As to prices, it is admitted that on current orders publishers are paying in some instances over 300 per cent. more for their news-print supply than they were a year ago. There is now the strange spectacle of news-print manufacturers calling conferences of the newspaper publishers and urging them not to use so much news-print, and stating that they should cut down the size of their papers, as they are giving too much reading matter in proportion to advertising! Anybody who had prophesied such an extraordinary development a year ago would have been thought a lunatic.

Serious Shortage of Lumber Camp Labor

It is now becoming quite evident that there is going to be a serious shortage of labor in the lumber camps this winter, which means a smaller cut than usual of pulpwood and higher prices for the same. This alone will cause the price of pulp and paper to go soaring once more. The recruiting of Forestry Battalions in Canada for service in timber cutting in Great Britain, to supply the lumber necessary for the trenches in France, has drawn away a large number of the best woodmen, while the demands of the munition factories in Canada is further depleting the supply. It is estimated that there are over 200,000 people at work in the Dominion's munition factories, and this has had a remarkable effect in stimulating all other lines of business. The pay of lumbermen has been doubled compared with two years ago, and many agencies report it impossible to get men even at wages ranging from $30 to $50 per month and board. SIR.

The new edition of Lockwood's Directory of the Paper, Stationery and Allied Trades—that for 1917—is now ready for distribution. Make certain that you obtain a copy of this standard reference book of the paper industry.

JOBBERS' BULLETIN NO. 3.

I always have enough new items each week to fill my space. If there is nothing in this bulletin that you need right now cut it out and file it anyway. You can't tell, you may get a call for something in this issue two or three weeks from now. While the items may not reappear in the next issue, it does not mean that it is sold. Bear in mind that you will grow to need me just as much as you do many other sources of supply, so long as the abnormal condition of the paper market exists.

1000 reams 20 x 30—480 Fourdrinier No. 1 white tissue.
500 " 20 x 30—480 Cylinder No. 1 white tissue.
1000 " 20 x 30—480 Grass Bleached Silver Tissue.
1000 " 20 x 30—480 Cylinder No. 1 White Tissue.
1000 " 24 x 36—480 Manilla Tissue.
1500 " 24 x 36—480 Anti-Tarnish Tissue.
1000 " 24 x 36—480 Jute Manilla Tissue.
500 " 20 x 30—480 Black Tissue.
500 " 20 x 30—400 Black Tissue.
500 " 19 x 25—480 Black Tissue.
1000 " 19 x 25—400 Pink Tissue.
1200 " 19 x 25—400 Blue Tissue.
300 " 20 x 30—480 Dexter's Orange Tissue.

4 tons 24 x 36—25 Imitation Bleached Glassine.
1 ton 30 x 40 Basis 24 x 36—25 Imitation Bleached Glassine.
No. 2 Kraft—All regular size sheets—all weights.

50 bdls. 40 x 48—200 Screenings.
50 " 40 x 48—250 Screenings.
25 " 48 x 64—400 Screenings.
20 " 40 x 48—200 Odell's K Fibre.
20 " 40 x 48—250 Odell's K Fibre.
20 " 48 x 64—400 Odell's K Fibre.
50 " 58 x 68—600 Odell's K Fibre.

20 tons 29½" rolls No. 2 Manilla, 35 lb. Basis, Jumbo Diam.
2 tons 40 x 48—90 Sulphite Kraft.
100 rolls 15", 40 lb. Halifax Kraft.
100 " 18", 40 lb. Halifax Kraft.
100 cases 4½ x 5—1000 Manilla M. G. Toilet Paper.
100 " 11½ x 15 Crepe Towels.
100 bdls. 13½ x 13½ White Crepe Napkins.
20 tons 15 x 20, Basis 24 x 36—25 lb. White News in 50 lb. bdls.
100 bales each 3 and 4 Ply Jute Wrapping Twine.
12,000 ⅛ bbl. Kraft Poultry Sacks.

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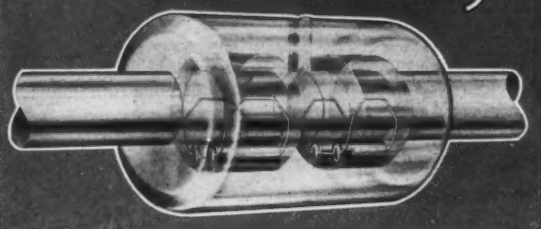

Cathcart U. S. Patents issued and pending.
Foreign Patents applied for.

Eliminate Needless Sacrifice of Men and Money

If your plant still uses flange couplings and collars and set screws, you are actually wasting money. You can practically eliminate accidents due to men getting caught on revolving shafting by using

Bull Dog Shaft Couplings

The men work better and faster because they do not fear an accident when near the shafting. By eliminating accidents you can decrease your accident liability and you get the most from the investment you make in training your men. If the shafting is slightly out of line, these couplings will take care of the error without power-loss—another saving.

The coupling is a metal cylinder, having two eccentric chambers, each containing a rolling lock which grips the shaft automatically without bruising or marring it.

Send for free bulletin.

Automatic Shaft Coupling Co.

Manufacturers ALEXANDRIA, VA

SUPPLY HOUSES CARRYING STOCK

Charles H. Newman.....New York City
Central Distributing Co.....Detroit, Mich.
Central Distributing Co.....Jackson, Mich.
Crook, Kreis & Co.....Baltimore, Md.
Diamond Specialty & Supply Co.....Philadelphia, Pa.
Culpepper Machine Co., Inc.....Culpepper, Va.
Ryther & Pringle Co.....Carthage, N. Y.
Standard Supply & Equipment Co.....Trenton, N. J.
Macan, Jr., Co.....Easton, Pa.
Lewis E. Tracy Co.....Boston, Mass.
L. L. Ensworth & Sons.....Hartford, Conn.
Lyon & Grumman Co.....Bridgeport, Conn.
Chas. A. Templeton, Inc.....Waterbury, Conn.
Turner Supply Co.....Mobile, Ala.
The Union Iron Works Co.....Selma, Ala.
Carolina Supply Co.....Greenville, S. C.
Fulton Supply Co.....Atlanta, Ga.
Montgomery & Crawford.....Spartanburg, S. C.
Charlotte Supply Co.....Charlotte, N. C.
Crawford Mill Supply Co.....Winston-Salem, N. C.

72-35

REGULATIONS AS TO DISINFECTING BAGGING

It Is Expected That Modifications of Them Will Be Promulgated Within the Next Two Weeks by the Federal Horticultural Board—In an Investigation of the Subject the Representative of the Board Visited a Number of Paper Mills—What He Found on His Trip—No. 1 Burlap May Not Need Disinfection.

[FROM OUR REGULAR CORRESPONDENT.]

WASHINGTON, D. C., Sept. 25, 1916.—It is understood on very good authority that the new regulations which will be issued within the next two weeks by the Federal Horticultural Board, relative to the importation of waste bagging, and the disinfection of the same, will be much easier on the paper manufacturers than the regulation which was issued a few months ago and about which there was so much protest.

Joseph H. Batt, of the Board, has been in direct charge of this work and he informed your correspondent that he had visited many paper mills and bag mills since the hearing which was held here in July for the paper men.

Mr. Batt said that from what he could learn the vast majority of the paper mills, who use this waste, use No. 1 burlap. It is now proposed by the Board that this No. 1 be allowed to come into the United States without being disinfected, under certain restrictions. Provided this No. 1 is still carefully put up by foreign shippers and they send a certificate to that effect, the bagging will not even be inspected at the wharfs of this country. However, the Board wishes to have the privilege of inspecting this bagging from time to time at the mills where it is being used, and if it is found that the foreign shipper is taking advantage of the situation, that shipper's goods will no longer be allowed to pass without inspection. In other words, those paper manufacturers of the United States who are using No. 1 burlap will not have to pay the extra cost for disinfection. It is expected that the new amendment will be issued by the Board in the next two or three weeks.

The amendment to the "Rules and Regulations Governing the Importation of Cotton in the United States," was to have become effective on August 1. However, paper manufacturers interested, came to Washington early in July and pointed out the injustice of the new amendment. Following the hearing the date that the amendment was to become effective was changed to January 1, 1917, and in the meantime an investigation was started with the result that this amendment will be still further amended as mentioned above. Following is the official notice which was to have become effective on August 1 and which was the one against which the paper men protested when here:

"Under authority conferred by the plant quarantine act of August 20, 1912, it is ordered that the regulations governing the importation of cotton into the United States, revised January 25, 1916, effective February 1, 1916, be, and the same is hereby amended, effective on and after August 1, 1916, by the addition thereto of a new regulation to be designated as Regulation 15, reading as follows:

Regulation 15. Importation of Burlap or other Fabric which has been Used for Wrapping Cotton subject to restriction.

Burlap or other fabric, under whatever name or trade designation, which has been used for wrapping cotton and to which cotton is adhering shall be subject to all requirements of these regulations; Provided, that material covered by this regulation which has been freed from all adhering cotton and disinfection by a process approved by the Federal Horticultural Board may be admitted without further disinfection. Material covered by this regulation which has been disinfected under the supervision of an inspector of the Department of Agriculture, as required by Regulation 7, and material admitted without disinfection under the foregoing proviso, may be distributed, forwarded, or shipped, without the restrictions prescribed by Regulations 8, 9 and 10. Burlap or other fabrics of the kind ordinarily employed in wrapping cotton but which have not been so used may be admitted without inspection if the invoice is accompanied by a certificate." L.

Low Water at Hull and Ottawa

[FROM OUR REGULAR CORRESPONDENT.]

OTTAWA, Ont., Sept. 26, 1916.—The River Ottawa has now gone below its normal level and the paper mills of Ottawa and Hull are feeling the drought The mills continue to work every hour, however, for the present. The paper demand is greater than the handicap. W. N.

Cotton Waste House to Move Office

S. H. Waldstein, one of the well-known cotton waste dealers with offices at 170 Summer street, Boston, announces that he will remove on October 1 to the Rice Building, 10 High street. The new offices will be located on the eighth floor, and Mr. Waldstein will be glad to see his friends and customers in his new quarters after that date.

J. A. Conners Back from Cruising Trip

James A. Conners, of the James W. Sewall office, Old Town, Me., has returned from a cruising trip of two months duration in the upper Allagash section of Maine.

Lambert Paper Company Reorganized

SALT LAKE CITY, September 20, 1916.—A reorganization of the Lambert Paper Company has been effected by the addition of several new interests. The company has a capitalization of $150,000,000.

The new officers are George C. Lambert, president; Fred J. Kiesel, vice-president; David A. Smith, vice-president; Frank R. Snow, vice-president; John M. Hayes, secretary; Willard T. Cannon, Louis W. Lund, directors, and George C. Lambert, Jr., treasurer and manager. The purpose of the reorganization is to enable the company to extend its operations and to increase its long established business.

Deeds Paper Company Reduces Fire Risks

TOLEDO, September 22, 1916.—The Deeds Paper Stock Company, 925 Champlain street, has been enjoying a rapid growth. The company was established in March of this year, occupying a three-story building, with a total floor space of 6,912 square feet. It is owned and managed by two Toledo men, Ralph C. Deeds and C. W. Harris.

The collection of waste paper from offices and buildings in the downtown district is given special attention. Two wagons and one truck are kept busy constantly. With the system of collecting paper that the Deeds Paper Stock Company uses, the accumulating of waste paper is prevented. Crates are left with their customers and the paper is put into these and called for by the company. By doing away with the paper in this manner and not allowing it to stack up the danger of fire is reduced. With this method of collecting paper, it is not necessary to bale the paper at the office or building. The company's plant is equipped with an automatic baler. Paper pressed out by this baler weighs about 2,300 pounds to the bale.

CLAY

WORTH WHILE

MADE IN AMERICA

LOWER MOISTURE
LESS GRIT
than any
Foreign Product

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INQUIRY
NOW
FOR
CM — EW — KLM
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MINER-EDGAR COMPANY
52-62 WARREN STREET
BROOKLYN, N. Y.
Sole Selling Agents for EDGAR BROS. CO.

PROMPT

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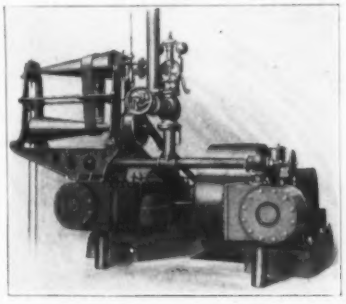
THE C. L. LaBOITEAUX COMPANY

We call the attention of the Jobbing Trade to our unequaled facilities for prompt shipment of

Mill Blanks, Bogus Bristols, Marble Grained Jute Boards, Clay Coated Box Boards, Binders' Board, Paper Box Board, Pasted Boards, and Paper Board Specialties

CINCINNATI CHICAGO NEW YORK CLEVELAND

Write for our new Blue Book, just issued, containing valuable information in regard to Box Boards, Paper and Specialties.



High Grade Variable Speed Engines

In addition to the side crank belted engine shown in the cut opposite we also build a center crank twin which can be direct connected into the back line. In such cases the back line speed and the engine speed must of course conform. With this arrangement a great deal of floor space can be saved and the drive belt can be eliminated. Some of the most prominent new mills have connected up in this way.

CHANDLER & TAYLOR CO., Indianapolis, Ind., U. S. A.

SCREEN PLATES

For Flat, and Rotary Centrifugal Screens. Made of Hardy Bronze, Rolled Brass and Copper. Grooved or beveled for any kind of fasteners

Acid-Resisting
Bronze Castings
Suction Plates
Babbitt Metal
Hardy Bronze Screws

HARDY

OLD PLATES
RECUT TO
ACCURATE GAUGE

WM. A. HARDY & SONS COMPANY :: Fitchburg, Mass., U. S. A.

WISCONSIN WATER POWER LEGISLATION

It Is Now Being Discussed as the Time for the Convening of the Legislature Draws Near—The Importance of Water Powers Being Appreciated to a Greater Degree Than Heretofore—The State Is Reaping the Benefit of Recent Developments—If Change in Laws Is Made It Will Be in Way of Encouraging Development of Powers Still Remaining Idle.

[FROM OUR REGULAR CORRESPONDENT.]

APPLETON, Wis., Sept. 26, 1916.—As the time for the new legislature to convene draws nearer, prospective water power legislation is being discussed in corners of the state where that subject is of vital interest. The last two years have done more to bring to the attention of Wisconsin people the importance of water powers than any period in the history of the state. Up to that time most people have scarcely considered water powers a real asset. In fact, some of the legislation that has been written upon the statute books of this state seems now to clearly indicate that those responsible for it had but little appreciation of the importance of these powers. Now, however, since the last two years of operation under a little more sane law, it has become very apparent, in dollars and cents, in fact, that the powers are of vital importance to every pocketbook in the state.

Within the last few years some of the best powers of the state have been developed and the state treasury is now reaping the benefit. A valuation for taxing purposes of $4,500,000 on two water power properties alone has been placed upon the assessment rolls of the state. One of these is the Prairie du Sac project and the other the development at Kilbourn. All the revenues raised on those properties go into the treasuries of the cities, villages, towns in which they are located or through which their transmission lines run. The tax on those two properties alone amounts to nearly $100,000. And yet some of our self-styled "reformers" have favored such restrictive legislation as practically forbid water power development in this state. If any change in the laws regulating power development is made at the forthcoming session of the state legislature, it will be to withdraw the bars still more so as to encourage the prompt development of the powers still remaining idle. S.

Spanish River Co.'s Annual Meeting

[FROM OUR REGULAR CORRESPONDENT.]

TORONTO, Sept. 25, 1916.—At the annual meeting of the Spanish River Pulp & Paper Co. in Toronto on Thursday next, Sept. 28, it is expected the more favorable conditions will enable the company to meet the interest on its bonds, which had been funded for the past two years. This will include the Lake Superior Company's bonds, the second mortgage notes of the company and the Spanish River bonds, interest on the last mentioned being arranged to be met on Jan. 1, 1917.

Many improvements have been made in the plants (Spanish River's and Lake Superior's) the past year by which the output was increased 10 per cent, and much must be done during the next year.

The president, George H. Mead, of Sault Ste. Marie, in his statement defends the company and mills generally against charges in the papers of excessive prices for news print.

"While relatively small tonnages have been sold at unusual figures," he says, "the general market advance has not been more than sufficient to care for the large increase in costs. Operating conditions, already most difficult. are each month becoming more severe, with corresponding increases in cost, therefore further advances in selling price must be made."

The financial statement shows the net revenue of the Spanish Company was $623,509 and the Lake Superior Company $718,881, a total of $1,342,390, the net surplus for the year being $162,709 and $268,582, respectively. In the assets pulp wood is set down at $1,049,645.09 for the Spanish and $946,338.90 for the Lake Superior Company. It is reported that the company is considering the erection of a sulphite plant at Espanola, where one of its mills is located, to have a capacity of 70 tons. It is pointed out that the nearest chemical pulp plant is at Fraser Falls. The four new grinders at the Espanola plant will soon be in operation, bringing the total to 28. BL.

Pennsylvania Board & Paper Company

[FROM OUR REGULAR CORRESPONDENT.]

PHILADELPHIA, September 25, 1916.—Under the title of the Pennsylvania Board & Paper Company, a new paper and board industry has been incorporated here.

The new enterprise is being organized by George Scott Stewart, Jr., Donald Howell, Walter E. Schembs and Matthew Usinger of Philadelphia, for the purpose of engaging in the manufacture and sale of paper and paper board of all descriptions.

Partington Pulp & Paper Company to Be Sold

The report that was printed in the PAPER TRADE JOURNAL last week has been confirmed as true concerning an option on the Partington Pulp & Paper Company, of St. John, N. B., which was said to have been secured by the Oxford Paper Company, of Rumford, Me.; the Bryant Paper Company, of Kalamazoo, Mich.; and the Provincial Paper Mills Company, of Toronto. A stockholders' meeting of the Oxford Paper Company was scheduled for yesterday at Rumford, Me., at which the purchase of the Partington plant was to be discussed. The consent of the stockholders was probably obtained, but final steps cannot be taken for a few weeks, because the attorneys for the other concerns are not in the United States at the present time.

The Oxford Paper Company is interested in this purchase because of the wood holdings of the Partington Pulp & Paper Company in Canada. The purchase will involve a change of name for the Canadian mill.

Niagara Falls Jottings

[FROM OUR REGULAR CORRESPONDENT.]

NIAGARA FALLS, Sept. 25, 1916.—The Niagara Peninsula Printers' and Publishers' Association will be held at Niagara Falls, Ont., next Friday afternoon at 2 o'clock. H. Siday of Welland, Ont., is president, and J. H. Thompson of Thorold, Ont., secretary. A. R. Alloway, secretary of the Canadian Press Association, is expected to be present.

The annual meeting of the stockholders of the Pettebone-Cataract Paper Company will be held in the office of the company on the canal basin next Saturday morning at 11 o'clock. Seven directors will be elected.

Secretary-Treasurer H. A. Constantine of the Foley-Rieger Pulp & Paper Company has applied for a patent for a new papermaking machine which, it is said, will bring about great economies.

James Bartlett of Sydney, N. S., an employee of the Ontario paper mill at Thorold, Ont., was instantly killed last Tuesday by a heavy steel roof truss. Six trusses had been raised. Bartlett was working on the seventh truss when it gave way and carried Bartlett and several other workmen to the girders 20 feet below. Coroner Herod held the cause of death was accidental. LO.

Bleached and Unbleached

GROUND WOOD

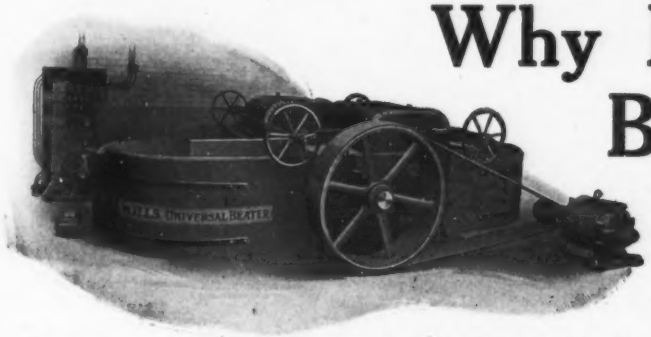
For samples and quotations apply to

M. GOTTESMAN & SON

Established 1886

18 East 41st Street NEW YORK, N. Y.

Why Enlarge Your Beater Room?



Why Add More Power?

This beater reduces stock to fibre of equal or better quality in half to one quarter of the time and with a saving of power which is remarkable. Do not take our word. Investigate. Manufactured by

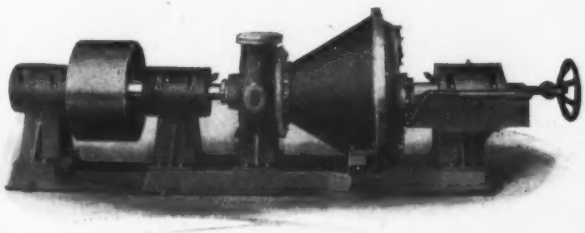
All infringements on present patents and patents to be issued will be vigorously prosecuted.

MILLS MACHINE CO., Lawrence, Mass., U. S. A.

Builders of all kinds of paper mill machinery.

Increase Your Production

Three Claflin Continuous Beaters will handle as much stock as six tub-beaters. The six tub-beaters will cost three times as much as three Claflin Continuous Beaters. Six tub-beaters will occupy four times the floor space required for three Claflin Continuous Beaters. These facts have been demonstrated daily for the past nine years in some of the best mills in the country.



It has also been demonstrated beyond question that the Claflin Continuous Beaters do better beating and brushing, produce a finer, stronger and more uniform pulp than the tub-beaters.

We also have many customers, who prefer our Continuous Beaters to Jordan engines, because the fillings never break or tear out, and they obtain a better product than from a Jordan.

If you manufacture Kraft paper, and are having trouble with tub-beaters, Jordans and other refining engines, write us for special information on Kraft stock.

THE CLAFLIN ENGINEERING CO. LANCASTER, OHIO

THE MOST POWERFUL ADVERTISING MEDIUM

New York, September 28, 1916.

To Advertisers:—

When a construction engineer wants to blast his way through a rock wall, he is apt to prefer a ton of dynamite to a pound of powder.

When you are trying to batter your way through the rock wall of indifference on the part of buyers who should be interested in your products, consider the construction engineer's policy. The surest and quickest way is to use the most powerful advertising medium at your command—the PAPER TRADE JOURNAL.

The PAPER TRADE JOURNAL is read by every member of the Paper and Pulp Industry who would be interested in your products—it has an entree where your salesman could not pry his way. It reaches the very individuals you desire to reach, at a time when they are in a receptive mood.

Your advertising appearing regularly in the PAPER TRADE JOURNAL would be to your efforts in seeking business in the Paper and Pulp Industry, what the ton of dynamite is to the construction engineer—The Power to force an opening to obtain dividend-paying results.

Yours for service,

A. A. TANYANE,
Gen. Adv. Mgr.,
Lockwood Trade Journal Co., Inc.

Recent Incorporations

WONDER PAPER COMPANY, Chicago.—Capital stock, $50,000; Albert Christensen, Albert M. Crane, Reuben C. Hallott.

HENDRYX CO., INC., closures for bottles, containers, metal goods, paper stocks. Capital stock, $25,000; A. E. Davis, M. E. and W. A. Hendryx, 136 Liberty street.

GIBSON STUDIO OF ENGRAVING, INC., Rochester, N. Y.—Stationery, books, publications, copperplate engraving. Capital stock, $15,000; G. E. Simpson, W. E. Crossett, J. T. Gibson, 63 Cypress street, Rochester.

KEYSTONE BINDERY, INC., Brooklyn, N. Y.—Publisher, printer, stationer, binder. Capital stock, $10,000; A. Courbalk, J. and B. Kazazian, 1716 Sixty-sixth street, Brooklyn.

COSMUS & CO., INC., New York.—Stationer, printer, publisher, lithographer. Capital stock, $25,000; H. Birrell, E. M. Kent, K. A. Cosmus, 128 W. Eleventh street.

JEWELRY TRADE PUBLICATION CO., INC., Eddyville, N. Y.—Publish trade papers of interest to jewelry business. Capital $37,500; L. H. Gunther, S. B. Howard, A. W. Britton, 28 Nassau street.

TALKING MACHINE PUBLISHING CO., Hoboken, N. J.—Publish books and periodicals and deal in stationer's supplies. Capital stock, $50,000; Earl G. Whitehorne, Caldwell; John J. Corell, New York; A. C. Powers, Clifton, N. Y.

BUSINESS MEN'S WASTE CO., Boston.—To handle cotton waste, paper stock, etc. Capital stock, $25,000.

Para in 1914 imported printing paper to the value of $44,380 and in 1915 to the value of $95,228. In 1914 she imported writing paper to the value of $11,648 and in 1915 to the value of $12,475.

News of the Mills

The Arlington Paper Mills Company is pushing the work of repairing its new purchase—old Hubbard paper mill—in Greeneville and which was lately known as the Norwich Paper Mills Company. The company found the need of repairs much more extensive than was anticipated, which is the reason the second machine has not as yet been started, but it is expected that the mill will be running full with both the machines within a short time.

Twice visited within a year with disastrous fires, the plant of the Fibre Corporation at Lockport, N. Y., was again threatened last Thursday. A blaze originated in a small building containing pitch melting tanks. The fire was confined to the building. The night force extinguished the fire without the aid of the city department.

The work of building a $200,000 addition to the Lincoln paper mills at Merritton, Ont., will be started next month. The addition will be built in front of the present office building.

The mill of the Halltown (W. Va.) Paper Board Company, which has been closed since the middle of July for the installation of new machinery, has been reopened and is being operated with an increased force of men. The plant has been entirely remodeled, and the output has been doubled.

An addition to cost $20,000 is contemplated by the Bergen Paper Company, located on the bank of the Hackensack River, in Ridgefield Park, N. J. The present frame walls will be torn down and replaced with brick walls in accordance with the building code. Two stories, it is understood, will be added to the structure.

Girls Escape from Paper Stock Fire

ST. LOUIS, September 25, 1916.—Fire on the third floor of the Missouri Paper Stock Company, 2207-2209 Scott avenue, on September 18 drove out 12 girls working on that floor, who escaped by the stairway, and destroyed the contents of the four-story building, mostly bales of waste paper. The damage to the building was estimated at $8,000. The tonnage and value of the waste paper could not be ascertained by the police.

Opportunity to Obtain Pulp Wood Area

An exceptional opportunity is presented elsewhere in the advertising columns of this issue to obtain a pulp wood and timber area, extending 2,400 square miles of virgin forest. The growth is large, of superior quality and exceptionally sound, mainly of spruce, with about 10 per cent. fir, birch and juniper. Large rivers traverse the area, affording admirable logging facilities and adequate power for all requirements; with safe, deep harbors close to the mill sites, affording perfect loading and shipping facilities.

Shot by a Strikebreaker

NYACK, September 25, 1916.—Thomas Hughes, president of Local Union 89 of the International Brotherhood of Paper Makers, was shot and seriously wounded this afternoon by John Miller, a negro strikebreaker employed in the Piermont Paper Mills.

Hughes was endeavoring to convert Miller to unionism when the negro drew a revolver and shot him through the abdomen. A squad of deputy sheriffs placed Miller in an auto and hurried him to the county jail at New City.

Trouble has been brewing between strikers and strikebreakers for several days, and tonight twenty-five deputies and as many more private detectives are guarding the paper mill.

Howard Paper Company

URBANA, OHIO

PRODUCT
Bonds, Ledgers and Writings

SPECIALTY
Watermarking and Designs

AURANTINE

"OSAGE ORANGE"
POWDER AND PASTE

COLOR SIMILAR TO AURAMINE

MARDEN, ORTH & HASTINGS COMPANY, Inc.
61 BROADWAY, NEW YORK CITY

ORR FELTS AND JACKETS

ALL ARE GIVING SATISFACTION ON

NEWS AND FAST RUNNING MACHINES

THESE FELTS ARE WOVEN ENDLESS

THE ORR FELT & BLANKET CO., Piqua, Ohio, U. S. A.

Missisquoi Pulp & Paper Co.

SHELDON SPRINGS, VT.

Manufacturers of

WHITE and COLORED BRISTOL
MANILA TAG BOARD

and

Specialties in Card Board

DELLO QUALITY SERVICE BOND

AND

HIGH-GRADE WRAPPING PAPERS

ODELL MANUFACTURING COMPANY
291 Broadway, New York
PAPER AND PULP MILLS, GROVETON, N. H.

Editorial

Vol. LXIII. New York, Thursday, September 28, 1916 No. 13
FORTY-FIFTH YEAR

Delayed Publication

We have delayed the publication of the PAPER TRADES JOURNAL this week in order that we may include in this issue an account of the proceedings of the Technical Association of the Paper and Pulp Industry, the meetings of which were held on Thursday and Friday of this week in New York. We know that our readers like to be informed of the latest proceedings, and for this reason we have held the paper two days over its regular publication day.

The Dye Situation

The condition of the color market has improved very much, and as a consequence of increased production, the prices ruling are more moderate than they have been.

As evidence of the change that has taken place, we quote what Dr. Thomas H. Norton, of the Department of Commerce, Washington, has to say on the subject. He is quoted as follows:

"American dye manufacturers now are producing about 75 per cent. of the amount of dyestuffs required by the manufacturing industry of this country at the beginning of the war. About nineteen-twentieths of the demand of the country at that time as regards variety of colors now is being supplied by dye manufacturers of the United States. The output of dyes here has increased wonderfully during the last two years and continues to increase by leaps and bounds. I believe that within six months we will be producing dyes at a rate which will be equal to what dye consumption here was in 1913.

"During the last two years about thirty new dye companies have been established and are in operation. The production has fallen far short of actual requirements, but it steadily is increasing. The demand has been abnormal, but based on the requirements of this country in 1913 it has been quite remarkable. Last January we were producing only about 50 per cent. of what were our requirements at the end of 1913. Now we are producing about 75 per cent. of what was required to meet the 1913 demand.

"We now are meeting the normal demand for blacks and we are nearly able to meet the demand for blues. We have been increasing at lesser rates the need of reds, oranges, yellows and various other colors.

"It will take some time to develop the production of a large variety of colors, but I have confidence in our ability to do so. We now have organized the machinery of manufacture to meet the legitimate needs of the manufacturers."

"The census of the dye industry, just taken, will show the present production and the demand as based on the requirements of the trade at the beginning of the war. It has been impracticable to base figures on the present demand.

"In the last eighteen months the output of various textiles from United States mills has increased greatly above old standards. It now is abnormal. That means that the demand for colors is greater than ever before in our history. Wools and leathers require a tremendous amount of color and in order to figure out what the demand is for dyes for all the products we are now turning out it would be necessary to go into the question of increased production in all lines of industry.

"Before the European war the United States imported every year about 2,500 short tons of aniline oil and aniline salts.

"In 1916 more than 15,000 tons will be manufactured on American soil from American coal tar crudes. In 1913 our American color works produced 3,300 short tons of coal tar colors, made chiefly from German intermediates. We imported 25,700 tons of artificial dyes, 22,000 tons coming from Germany.

"The production of synthetic colors has reached the point where an annual output of more than 15,000 tons is assured and every pound is made from American coal tar. Color chemists confidently look forward to meeting at an early date the bulk of the country's demands for artificial dyes as far as quantity is concerned. Each month will witness a steady increase in the variety of available colors."

This is indeed encouraging, and we trust that Dr. Norton's prediction will be more than fulfilled.

The Search for Raw Materials

We are constantly hearing nowadays that so and so has discovered a new fibre for paper makers' use, and that the discovery promises to revolutionize the industry. As a rule such announcements come from people who are grossly ignorant of the requirements that such a fibre must meet, and while some of the fibres may be all right as to quality, they are all wrong as to an adequate supply and as to the cost of converting them into paper.

Most of the people, disconnected with the industry and some of them who are within its folds, are simply working in old fields, resurrecting fibres that have been investigated and thrown aside as failing wholly to satisfy the paper makers' needs in the way of raw materials. These investigators in large part are imitating the minister who obtained a "new" sermon by turning upside down the barrel in which he kept his stock of discourses.

Canada's Paper Exports

In the fiscal year ended June 30, 1916, Canada's exports of paper were of a total value of $21,256,296, as against $16,200,635 in the corresponding period in 1915. Of this former amount $17,759,018 worth or more than the total value of the 1915 export, was sent to the United States. This would seem to justify the statement that our Federal legislators, by their ill-advised action, succeeded in transferring to the Dominion a very large part of the United States paper industry.

The United Dye Wood Corporation has been incorporated at Dover, Del., with capital stock of $20,000,000. The business was described as intended to "manufacture chemicals, colors, coloring matter, and dyestuffs; to purchase, sell, and deal in and with the same and the products of the same, and to promote research tending to improve the processes of manufacturing dyewood extract."

PAPER SUPPLIES FOR THE GOVERNMENT

Contract for Perforated Sheets for Post Office Department—Contract for Pink Paper for Bureau of Engraving and Printing—Chart Paper for Hydrographic Office—Bids for Distinctive Paper Trimmings—Bids for Green Cards to Be Opened October 2—Bids for Paper Cups, Etc., Will Be Opened October 3.

[FROM OUR REGULAR CORRESPONDENT.]

WASHINGTON, D. C., September 25.—The Purchasing Officer of the Post Office Department has announced the Smith-Dixon Company, of Baltimore, as the successful bidder for furnishing 800,000, 38 x 8-in. perforated sheets, bids for which were opened on September 14. The award was made on sample C at $3.72 per 1,000.

Contract for Pink Paper

The Smith-Dixon Company, of Baltimore, has been awarded the contract for furnishing the Bureau of Engraving & Printing, with 20 reams of 19 x 24-in., 20 lb., pink paper, at $2.80 per ream, bids for which were opened here last week.

Chart for Chart Paper

The R. P. Andrews Paper Company, of this city, has been awarded the contract for furnishing 130 reams of assorted chart paper to the Hydrographic Office, Navy Department, at $0.20½ per pound. The Andrews Company was the only bidder, bids being opened a short time ago.

Bid for Distinctive Paper Trimmings

Bids will be opened here by the Purchasing Officer of the Bureau of Engraving & Printing on October 4 for distinctive paper trimmings during the remainder of the current fiscal year.

The Bureau estimates that about 180,000 pounds of the material will be produced during the remainder of the current fiscal year. The award will go to the highest responsible bidder.

These trimmings consist of all linen paper in shredded form, and they will be packed in bales weighing approximately 400 pounds to the bale, each bale securely bound with wire, addressed for shipment, and covered with burlap or other suitable material to protect it while in transit. The approximate dimensions of the bales will be 54-in. by 30-in. by 30-in.

Bids for Green Cardboard

Bids are to be opened here on October 2 by the Purchasing Officer of the Government Printing Office for 2,100 pounds, or 5,000 sheets, of 22 x 28—210, green cardboard, 500 sheets to the ream, flat. Thickness not to exceed .0250, bursting strength not less than 80.

Bids for Paper Cups, etc.

Bids are to be opened for paper by the Purchasing Officer of the Panama Canal as follows on October 3:

4,000,000 hygienic paper drinking cups.

10,000 sheets of 25 x 38—801, enameled book paper, strength (Mullen) minimum, 24.

150 reams of 17 x 22—10 lbs. canary manifold bond paper, to contain not less than 50 per cent rag.

1,000 sheets of blue and 1,000 sheets of green, 22 x 28, marble paper.

150 pounds of 48-in. wide, 24 x 36—86 unoiled manila, tympan paper.

75 reams of 40 x 48—134 wrapping paper.

1,000 sheets of 22½ x 28½, 6-ply green R.R. cardboard.

Bids for Bond Paper to Be Opened

Bids are to be opened here by the Purchasing Officer of the Panama Canal on October 14 for 100 reams of 17 x 22—20 pink bond paper, strength (Mullen) minimum 27, to contain not less than 50 per cent. rag.

Bids will also be opened at the same time for 50 reams of 17 x 28—20 pink bond paper, strength (Mullen) minimum 25, to contain not less than 50 per cent. rag.

Contract for Toilet Paper

George W. Millar & Co., of New York, have been awarded the contract for furnishing 150 cases of toilet paper, 100 rolls to the case at $2,250, bids for which were opened by the Purchasing Officer of the Panama Canal on September 14.

Contract for White Index Bristol

Dobler & Mudge, of Baltimore, have also been awarded the contract, at $648, for furnishing 10,000 sheets of 22½ x 28½—160 white index bristol board, bids for which were opened on the same date.

Bids for Impression Paper

Bids are to be opened here on October 5 by the General Supply Committee for furnishing nearly 10,000 reams of laid impression paper as follows: 6,250 reams of 8 x 10½", 1,160 reams of 8 x 12½, 200 reams of 8⅛ x 11, 1,500 reams of 8½ x 14, 267 reams of 9 x 14, 150 reams of 16 x 21. L.

Mill to Make Bagasse Paper

NEW IBERIA, La., Sept. 20, 1916.—The secretary of the New Iberia Chamber of Commerce announced today that arrangements had been completed for early construction of a mill here for the manufacture of paper from bagasse. Eastern capitalists are interested in the venture, it was stated.

Canadian Jack Pine for Kraft Stock

[FROM OUR REGULAR CORRESPONDENT.]

OTTAWA, Ont., Sept. 26, 1916.—The Conservation Commission calls the attention of Canada to experiments showing that jack pine is well suited for making kraft paper. It will grow on poor land and is largely used in the West for fuel. W. N.

EDWIN BUTTERWORTH & CO.
MANCHESTER, ENGLAND
Packers of all kinds of
PAPER STOCK, COTTON WASTE AND GUNNY BAGGING, BUFFALO SIZING, Etc.
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BLEACHED SULPHITE PULP — BEAR BRAND
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JAMES PIRNIE, Manager, VANDERBILT BUILDING, 132 NASSAU ST.
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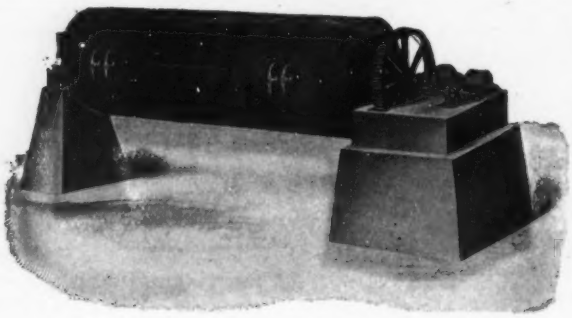
"WATERBURY"
W Felts-Jackets W
ORISKANY, N. Y.
OUR TIGHT FITTING, DIAMOND "W" JACKETS
WILL NOT LICK UP AT ANY SPEED.
1869 {MADE ONLY AND GUARANTEED BY} 1915
H. WATERBURY AND SONS COMPANY, ORISKANY, N. Y.



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SPECIFY

"BIGGS"

ROTARIES

IN "YOUR" NEXT INSTALLATION!

There's a Reason

Steel pressure and storage tanks for every purpose

WRITE FOR PRICES

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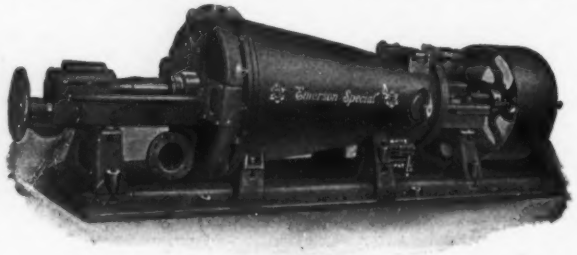
THE BIGGS BOILER WORKS COMPANY, AKRON, OHIO, U. S. A.

EMERSON MANUFACTURING CO.

LAWRENCE MASS.



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EMERSON BEATING ENGINES

They seldom wear out and are never thrown out. PERFECT CIRCULATION, NO "PADDLING"

The "EMERSON" JORDAN

does its work with half the power required by others of no greater capacity.

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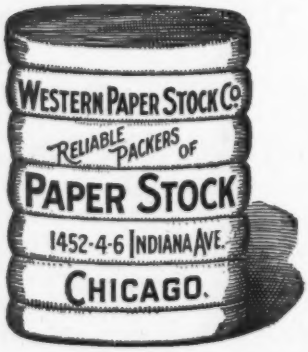

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Or have you some Machinery you would like to dispose of?

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The Harmon Machine Co.

WATERTOWN, N. Y., U. S. A.

High Grade Diaphragm Screens

INCLINE AND FLAT

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Stone Trueing Tools. Centrifugal Pumps

Blotting Paper of the Best Quality

MANUFACTURED BY

THE EATON-DIKEMAN COMPANY

LEE, MASS.

Manufacturers of Blotting, Matrix, Filter and all other grades of absorbent papers.

Registered brands Magnet and Columbian, also Lenox and Arlington.

SEND FOR SAMPLES AND PRICES

LOBDELL CAR WHEEL CO.

Wilmington, Del., U. S. A.

Manufacturers of

CHILLED ROLLS FOR PAPER MACHINES

Rubber, Brass, Copper, Flour,
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CALENDERS

FURNISHED COMPLETE, FITTED WITH PATENT
ELECTRIC MOTOR LIFT

Grinding Machines for Rolls of All Sizes

HUNGERFORD FILTERS

The Filters that never require
a renewal of the Filter Bed

HUNGERFORD & TERRY, INC.

Engineers and Manufacturers of Water Filters

Pennsylvania Building PHILADELPHIA, PA.

"DRAPER" FELTS

For Any Grade of Paper or Pulp

ARE GUARANTEED

To Give Entire Satisfaction

MANUFACTURED BY

DRAPER BROS. CO., CANTON, MASS.

The Heller & Merz Co.

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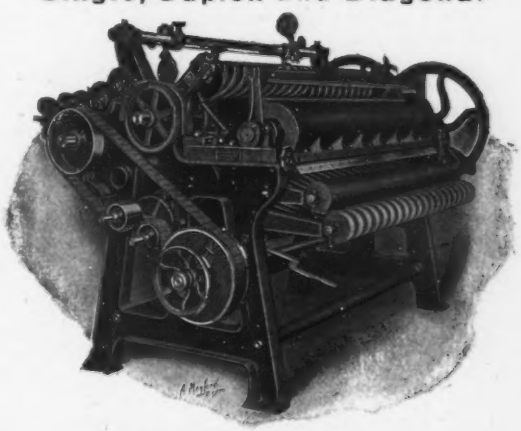
We can furnish all

AVAILABLE COLORS

to advantage.

Paper Cutters

Single, Duplex and Diagonal



CUTTER KNIVES

Patent Top Slitters

HAMBLET MACHINE CO.

Lawrence, Mass.

WHAT IS GOING ON IN "THE PAPER CITY"

American Writing Paper Company Gives Contract for Paper Machine to Moore & White Company—Big Writing Paper Company Installs Sample and Inspection Department—Paper Finishers Tentatively Accept Wage Schedule—Cutter Girls and Loftmen Have Grievance—R. N. Fowler's Wedding.

[FROM OUR REGULAR CORRESPONDENT.]

HOLYOKE, Sept. 29, 1916.—The American Writing Paper Company last week awarded a contract to the Moore & White Company, Philadelphia, Pa., for the re-construction of a 150-inch book paper making machine, which is to be installed at the George C. Gill Paper Company, division. At the offices of the American Writing Paper Company it was stated this morning that it was hoped that the installation of this machine and other improvements to be made at the George C. Gill division, would be completed by April 1, 1917.

These important changes and the installation of this exceptionaly large new book paper machine are being made with a view of effecting a substantial increase in the tonnage of book papers manufactured by this company. The new machine will have a capacity of from 35 to 40 tons of paper per day. A new machine room 260 feet by 60 feet, to house the machine is now being built at one end of the mill building.

Sample and Inspection Department

The acquisition of a Central Sample and Inspection Department by the American Writing Paper Company, and the appointment of J. Bertram Newton, as manager, is one of the more important improvements accomplished at the American Writing Paper Company during the summer months.

Henry P. Carruth, head of the Department of Tests of the American Writing Paper Company, played very delightfully the part of "host" for the benefit of the PAPER TRADE JOURNAL'S correspondent, yesterday, so that the writer was able to make a rather thorough review of this new department.

In the Sample and Inspection Department, samples of every grade of paper manufactured by the company will be on file, convenient for the inspection of the customers. The equipment consists almost entirely of standard filing cabinets containing 1,800 drawers of different sizes so as to fit the size of the paper samples. Even this large number of drawers is not sufficient to allow one grade of paper in a drawer, so in some cases two, three and more grades have been placed in the same drawer. At the right side of the room a complete line of the index and specialty papers manufactured by the company are shown. On the opposite side of the room book paper samples are shown. These come in full sizes and require drawers 25 x 38 inches. In the centre of the room the many different grades of writing papers are displayed. These come in sizes 17 x 22 inches.

Besides making convenient for instant examination the hundreds of samples, this department will inspect all the paper manufactured by the company so that all products that are shipped from the various mills to the consumer, have passed through the inspection department, the goods being up to the standard before shipment is made.

Another feature of this new department will be the installation of the necessary equipment for matching colors. This will include a color matching lamp, the more commonly used testing instruments such as scales, mullen testers, thickness gages and the like. 2,500 to 3,000 items of different colors will be carried.

At the Norman Paper Company, division, workmen are now busy installing two new large modern Babcock and Wilcox steam boilers.

Paper Finishers Accept Wage Schedule

At a meeting of the paper finishers employed in the various division mills of the American Writing Paper Company, held last week, Wednesday evening, it was voted to tentatively accept the proposition offered by the company in reply to the employees' demands for increased wages. The committee of finishers who represented the dissatisfied employees on Tuesday conferred with R. Franklin McElwain, who acted in behalf of the American Writing Paper Company, and the proposition of the company was at that time given to the committee. At the meeting the following evening the men decided to give the counter proposition a thorough try-out and if found satisfactory will be permanently adopted.

Cutter Girls Wages Advanced

A schedule of wages calling for an increase to $11 a week, and dating back from September 4, was submitted to the members of the Cutter Girls' Union meeting tonight by the local paper manufacturers, and the proposition was accepted without debate. Less than a year ago the cutter girls employed in the various local paper mills formed a union which later became affiliated with Eagle Lodge, the local branch of the International Brotherhood of Papermakers. At that time the girls employed in this branch of work received a salary of $8.10. Demands made shortly after brought their salary up to $8.91, and a little later another increase to $10 per week was given them. Recently the Cutter Girls' Union submitted another demand for increase in wages, and last night accepted the proposition of the manufacturers to increase the wages to $11 per week.

A special meeting of the Loftmen's Union has been called for this evening to take action on the grievances of members employed in an independent local paper-mill, who assert that they are required to do more work than men employed in the same departments in other local paper mills.

R. N. Fowler's Wedding

A wedding of much interest in local paper-mill circles was that of Ralph Norman Fowler and Miss Mabel Noble, both of Springfield. The wedding took place at the home of bride's parents on Madison avenue, Springfield, Saturday evening. Mr. Fowler is a well known paper-mill man, being connected with the Hampden Glazed Paper and Card Company. Miss Noble is a graduate of Mt. Holyoke College. A.

David Garsson's Wedding

On Sunday, September 17, 1916, at Stuyvesant Casino, New York, David Garsson married Miss Jennie Helfgott, daughter of M. Helfgott, who is in the paper mill supply business at 528 West 30th street, New York.

The wedding was elaborate and was attended by over 400 friends and relatives of both families.

The ceremony was impressive, and those present had an enjoyable evening. Soon after the couple left for a honeymoon trip and will visit Washington, D. C., and other interesting places.

David Garsson has been connected for the last few months with M. Helfgott & Son, Inc., and is well known and liked among the trade.

United Paper Board Company Closes Lockport Mill

NIAGARA FALLS, N. Y., Sept. 25, 1916.—As indicating that it does not propose to grant the demand of its striking employees, who quit about a month ago when their demands for an eight-hour day were denied, the United Paper Board Company last week closed its Lockport plant, and dispensed with the services of James O'Hara, mill superintendent. The sulphite department of the plant is still in operation.

MADE IN DETROIT

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Sulphate Alumina

Limited Offerings for Prompt Acceptance

DETROIT CHEMICAL WORKS
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GOLDEN OPPORTUNITY

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A PULP WOOD AND TIMBER AREA, extending over 2400 SQUARE MILES of VIRGIN FOREST

The GROWTH is Large, of Superior QUALITY and Exceptionally Sound, mainly of SPRUCE with about 10 per cent FIR, BIRCH and JUNIPER.

Large Rivers traverse the area, affording admirable Logging facilities and adequate Power for all requirements; with Safe, Deep Harbors close to the Mill sites, affording perfect Loading and Shipping facilities.

For particulars address J. F. P., care Paper Trade Journal.

Exposed to Acid Fumes

Here is a Spartan Belt pumping sulphuric acid fumes from the pickling room of the Halcomb Steel Company, Syracuse, N. Y. In addition to constant exposure to acid fumes, this belt operates without protection from weather extremes. It was installed in July, 1914, and is giving excellent satisfaction.

Spartan Belting will also prove a great resistant of adverse conditions in your mill.

THE GRATON & KNIGHT MFG. CO.
Oak Leather Tanners and Belt Makers
WORCESTER, MASS., AND PRINCIPAL CITIES

Mill Cogs

ON SHORTEST POSSIBLE NOTICE

We make all kinds of Mill Cogs and have special facilities that will be of great service to you. We make a specialty of **"ready dressed"** cogs which are

READY TO RUN

the moment driven and keyed. Write at once for circular "G" and instruction sheets, free.

THE N. P. BOWSHER CO., South Bend, Ind.
Established 1882.

IMPROVED HIGH SPEED MACHINERY TO MAKE

PAPER BAGS

OF EVERY STYLE OF BOTTOM FOR LINED AND UNLINED BAGS

POTDEVIN MACHINE CO.
253 36th STREET BROOKLYN, N. Y.

POSTMASTERS VISIT ENVELOPE MANUFACTORY

Third and Fourth Class Postmasters Attend Meeting of International League, and Also See How Government Envelopes Are Made and Shipped—The Estate of Mrs. M. E. Oglesby Distributed—M. T. Dooley's Change.

DAYTON, O., Sept. 25, 1916.—Third and fourth class postmasters representing every community in the United States assembled here during the past week to attend the convention of the International Postmasters' League.

For years many of these men had handled supplies sent out by the Government envelope agency but few had ever had the opportunity of inspecting the plant, and this privilege, granted on the occasion of their visit to the Gem City, was one of the really instructive, as well as genuinely entertaining, features of the gathering.

Every detail of manufacture was explained by competent guides and all features of the labor connected with supplying millions upon millions of stamped envelopes and newspaper wrappers placed before the postmasters.

Officials of the company and employees also attended to an important part of the entertainment connected with such an assemblage. A visit was also made to the National Cash Register Company's plant where methods were closely studied and the largest private printing plant in the United States was inspected.

The Oglesby Estate

The estate of Mrs. Mary E. Oglesby of Middletown has been distributed, according to the final account filed in the probate court by Benjamin F. Harwitz, executor. The largest bequest made under the will was to Mary E. McCoy, who received 290 shares of stock in the W. B. Oglesby Paper Company, valued at $29,000. A number of other bequests were made to individuals, while $1,000 was left to the Middletown hospital. The Park Commission of Middletown is named as the residuary legatee and will receive for park purposes 103 shares of preferred stock in the United States Printing & Lithographing Company, valued at $10,300. The executor's account shows receipts of $57,685 and expenditures totaling $6,950.

M. T. Dooley Makes Change

Michael T. Dooley, who for a number of years has been associated with the Champion Coated Paper Company at Hamilton, has accepted a position with the Delco Company of this city, manufacturer of lighting systems for automobiles and for suburban homes and buildings. Mr. Dooley will retain his home in Hamilton for a time but expects to remove here later.

Guarding Against Floods

The Board of Appraisers of the Miami Conservancy District has been making a tour of the Miami valley during the week in the interest of the project which promises to prove the greatest factor in the history of this section of the country, in affording protection from future devastating floods. The improvement will cost in the neighborhood of $17,000,000 and all that prevents immediate work is the interference by court action with certain features of the plan. When these are straightened out, and it is not believed that serious obstacles can be placed in the way for a much greater length of time, the Miami valley will experience the greatest boom in its history. However, all industries are running to capacity now. The flood prevention plan is so comprehensive, however, that it is almost impossible to predict the benefits to be derived, not only by the paper manufacturing trade, but by all industries and business enterprises.

S. M. Goodman, who for many years was connected with the coated paper manufacturing business; J. Edward Sauer, formerly an officer in a paper cutting machine business, and Banker Kaiser of Piqua are members of the Board of Appraisers who started the work of appraising land in the neighborhood of Hamilton this week. One week will be required to complete the labor.

Arrangements have been practically completed for the annual session of the Ohio Printers' Federation which meets in Cincinnati on October 5-7. Six hundred printers and publishers are expected to attend the session. Delegations will actually go to school for three days and will use pads of paper during this time to figure out costs of printing and to make estimates. It is planned also to visit the plants of the American Book Company, the Methodist Book Concern, the Western Newspaper Union, and the printing and lithographic schools at the Ohio Mechanics' Institute.

The Ben Franklin Club of this city will attend the federation meeting in a body and will strive to land the prize offered to the organization, or city, having the largest attendance. W.

PRINT PAPER INVESTIGATION

Federal Trade Commission Trying to Get in Close Touch with Union Paper Mill Workers as to Working on Sunday as Suggested by News Print Association.

[FROM OUR REGULAR CORRESPONDENT.]

WASHINGTON, D. C., Sept. 25, 1916.—Federal Trade Commission authorities, it is understood, are trying to get in close touch with the paper union workers to see if they will be able to come to any kind of an agreement relative to working in the mills on Sundays. These negotiations are a result of the suggestion which was made by the executive committee of the News-Print Manufacturers' Association, as published in last week's issue of the PAPER TRADE JOURNAL.

The authorities have been in touch, it is said, with the president of the union and no steps will be taken until they have received some kind of a reply to their communication. To date none has come to hand. It is the purpose of the commission, it is understood, to take the matter up informally with the officials of the paper union and later, if any results are obtained, it is quite possible that a conference will be held when the manufacturers and the union officials will be asked to attend. Just when such a meeting will be arranged cannot be ascertained at this time.

All of the field work on the newsprint report is said to be in the office of the commission. It will be out of the question, however, to make any kind of a report the latter part of this week, as was originally intended when the investigation was undertaken. Although not so informed your correspondent, from what he has heard, doubts very much if any report will be made even by the fifteenth of October.

Commissioner Parry, who has been in the closest touch with this whole paper question, and who has been out on the Pacific Coast for some weeks, is expected to return sometime next week. It is understood that he has collected some data relative to the newsprint situation on the west coast during his trip. L.

H. B. Tohms Goes to Chicago

[FROM OUR REGULAR CORRESPONDENT.]

APPLETON, Wis., Sept. 26, 1916.—H. B. Tohms, for some time machine tender in the big mill at International Falls, Minn., and formerly in a similar capacity in the plant of the Wisconsin River Paper & Pulp Company at Stevens Point, has gone to Chicago to take a position as head machine tender in the new wallpaper mill of the Sears, Roebuck Company. Mr. Tohms will remove his family to Chicago in a couple of weeks. S.

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For further detailed information, write or apply on the premises to A. J. McKeone, Pleasant Mills, Atlantic Co., N. J.

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WATERTOWN MEN OBJECT TO FEDERAL TRADE SUGGESTION

Paper Manufacturers in Northern New York Do Not Relish the Recommendations of the Federal Trade Commission —They Think That They Are Unreasonable, and Smile at the Proposition to Create a Surplus When Demand Is Now in Excess of Supply—Suggestion to Run Alternate Sundays Meets with Some Opposition.

[FROM OUR REGULAR CORRESPONDENT.]

WATERTOWN, N. Y., Sept. 25, 1916.—The members of the News Print Paper Manufacturers' Association from this section are not in accord with the suggestions of the Federal Trade Commission which were presented to the executive committee of the manufacturers' organization at their meeting in New York last week. Every possible effort is being made to stem the tide of high prices that is just now breaking over the publishers of the country. It is well known that before conditions are better they will be worse. Local paper manufacturers realize this and admit that the trouble is getting worse each day. But they say, "the publishers are just getting what is coming to them but they hate to take their own medicine. The boomerang hurled at the time William Howard Taft was president of the United States has just returned and has struck Mr. Publisher on the head."

Commission Suggestions Unfavorably Regarded

Some of the local newsprint manufacturers were asked what they thought of the suggested remedies offered by the trade commission. They pass them up as unreasonable in the extreme. The pro rata distribution to customers suggested for the purpose of producing a surplus is a joke, according to local manufacturers. "Think of a pro rata distribution when the demand is so great that it is impossible to fill the orders. How would a surplus be accumulated unless the manufacturer makes a sacrifice?" was the answer. "It was for the purpose of making money for themselves that the publishers advocated the Canadian reciprocity treaty. They succeeded, and they drove us to the wall. Now the worm has turned, and let them take their medicine," was the way one manufacturer put it.

The suggestion that the mills be run alternate Sundays met the same opposition here. Mill foremen work practically seven days a week now. They have to supervise repairs and machine adjustments each Sunday now. If the men were worked seven days a week they would not only lack in efficiency, but the repairs could not be handled and shut-downs would result for the lack of Sunday repairing that would overcome the advantage in production.

Do Not Care to Change from Wrapping

Another suggestion from the commission that some of the mills on wrapping and specialties place newsprint on their machines is considered absurd here. A year or so ago many mills changed from newsprint to these grades because there was more money in it. The specialties and wrappings have increased in price to even a greater percentage than newsprint. In some instances the advance has been 100 per cent. They ask here, Can such concerns be expected to sacrifice these profits for the sake of the publishers who in the past have deserted them and even their own best interests. Again the cat came back. "This talk about surplus is absurd when we are now running every minute and can't keep up with our orders," said a prominent manufacturer.

Effect of Reciprocity with Canada

The effect of the reciprocity with Canada which was forced through with the moral help of the publishers is made clear when the figures are shown. Eight years ago fifty tons of newsprint was sent across the border daily, while today one thousand tons is the figure. The manufacturers simply ask the question, "Who is kicking against the fact that newspaper advertising prices have about doubled in the past decade. That is someone else's business."

Indestructible Fibre Company Equipment Sold

The equipment of the Indestructible Fibre Company of Massena has been purchased by P. H. Moran, superintendent of the old Cylinder Paper Company here, now known as the J. A. Hahn Paper Company of this city. The Fibre Company went into bankruptcy several months ago with a large number of creditors.

It is not understood here that Mr. Moran intends to start in the paper manufacturing business personally, nor that he has a mill in view which he intends to purchase. He will bring the machinery to this city where it will be stored for a time at the plant of the Bagley & Sewall Company. It is understood that he will later dispose of it either to the J. A. Hahn Paper Company or to some other paper manufacturing company. It is said that the mill from which this machinery is purchased is in a very bad state and is not likely to be repaired and again started.

Complaints as to Coal Rates

Coal rates in this section, on which a complaint was made to the Interstate Commerce Commission, were brought forth in a hearing in this city today before Examiner Hillyer of the commission. Soft coal rates from the mines to points on the Adirondack division where it is largely used by the many paper manufacturing concerns, was the main article of complaint.

The concerns filing the complaint through the New York Paper & Pulp Traffic Association were the Newton Falls Paper Company, the Diana Paper Company and the Carthage Coal Company. The complaint stated that the rate on bituminous coal from the mines on the Pennsylvania railroad to Harrisville and Newton Falls was $2.10 a ton, which is ten cents higher than the rates on the main line as far north as Massena Springs. The complaint asks that the same rate be established on both lines in this section.

Contends That Rates Were Just

The complainants were represented by Thomas G. Smiley, general manager of the New York Pulp & Paper Traffic Association. Witnesses for the complainant were F. P. Wilder of the Diana Paper Company, Miss Florence Helmer of the Newton Falls Paper Company, and B. J. Hanrahan of the traffic association. The railroad contended that the rates were just and equitable. Briefs will be filed within thirty days and the commission will give a decision at its convenience. ST.

A New Decorated Line of Crepe Papers

Some years and considerable money has E. T. Neben devoted to the perfection of a process for the printing of many colors by the rotary printing method at high speed and with a high degree of perfection. This process has been granted a strong basic patent.

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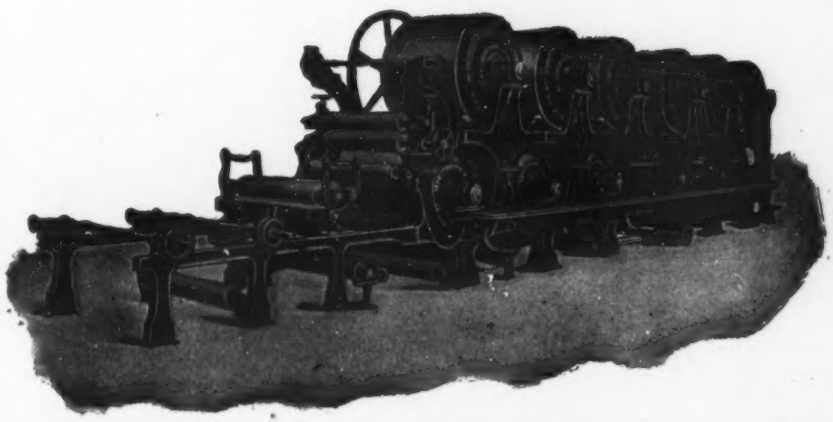

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KALAMAZOO ACTIVITIES IN THE PAPER FIELD

Work on Riverview Coated Paper Company Being Pushed Along Rapidly—The New Coating Mill of the Kalamazoo Paper Company and the Big Warehouse of the King Paper Company Nearing Completion—Fire in the Eddy Paper Company's Storeroom.

[FROM OUR REGULAR CORRESPONDENT.]

KALAMAZOO, Mich., Sept. 24, 1916.—Building operations continue to be the chief activity in Kalamazoo paper mill circles. While all of the mills are enjoying capacity business, the mill managers are rushing as fast as possible the various additions and new mills that are under construction. Difficulty to get material as fast as needed and also to get all the help that could be used are two factors that are causing some delay, but notwithstanding this fairly good progress is being made.

The brick work on the new mill of the Riverview Coated Paper Company's new mill is rapidly being completed. One building, the four-story stock structure, is already finished and the walls on the other buildings are part way up. The brick being used in the structures are almost white, giving the buildings a very attractive appearance.

Good progress is also being made on the new coating mill that the Kalamazoo Paper Company is erecting and the big warehouse that the King Paper Company has found necessary to build will be completed in a short time. The various improvements at the Hawthorne Paper Company are nearly finished and it will not be many more weeks before this company will be able to say that it is through with building operations for the time being at any rate.

Fire in Eddy Stock Room

Fire during the past week did over $10,000 worth of damage to stock that was stored in the stock room of the Eddy Paper Company at Three Rivers, Mich. The blaze was in the top of the room, and when discovered had gained considerable headway. The fact that the sprinkler system worked perfectly and the foresight of the company's manager in installing several fire hose connections about the mill enabled the men at the mill to put up a good fight against the blaze before the arrival of the fire department. The firemen confined the blaze entirely to the stock room and the building itself escaped much damage. The biggest loss was to the stock and this was caused to a very great extent by water. It was not necessary for the mill to close down during the day.

There is considerable rejoicing about the mill of the Kalamazoo Paper Company. It is all due to the fact that the city is at last making plans to pave the street which leads to the mill. There is a stretch of about an eighth of a mile between the present paving and the county's improved highway which has been in deplorable condition for years and no amount of kicking could bring about a change. Now the prospects are that before many months the street will be paved and put in good condition. Past conditions have at certain times of the year made heavy trucking to the mills of the Kalamazoo Paper Company, the Riverview Coated Paper Company and the Hawthorne Paper Company almost impossible.

Consumers' Power Company's New Dam

Announcement has just been made by the Consumers' Power Company that work will be started at once on the new dam to be built across the Manistee river about 30 miles from the city of Manistee. The increased demand for electrical power in this part of the state has caused the company to start operations at once. The new dam will give to the company an additional power of 65,000 to 87,000 horsepower. The dam will be 50 feet high, 200 feet thick at the base and 40 feet at the top. The pond that it will create will cover over 2,000 acres. The company regards the new dam as one of the most important improvements made in some time.

Small Publishers Want to Be Mill Owners

[FROM OUR REGULAR CORRESPONDENT.]

APPLETON, Wis., Sept. 26, 1916.—Some time ago it was stated in this correspondence that certain interior newspaper publishers in this state were agitating the project of a lot of them getting together, forming a company and buying a print paper mill for the manufacture of stock used in their papers. And now comes the report from St. Paul, Minn., to the effect that other small publishers, some in that neck o' the woods, are cogitating on the same subject. The St. Paul report quotes F. W. Allsop, publisher of the Little Rock, Ark., *Gazette*, who in an interview there stated that in his opinion small publishers should get together, own a mill and in that manner safeguard against a shortage of print paper such as prevails at the present time. Mr. Allsop was one of a delegation of southern newspaper publishers who stopped at St. Paul while en route home after a conference at International Falls. Mr. Allsop suggested the alternative for publishers of buying up mills now in operation or establishing new plants sufficient to meet the publishers' needs. As far as the mills are concerned or especially the one at International Falls, Mr. Allsop was frank to say the present shortage of print paper is not from an artificial or pre-calculated cause. "We are satisfied conditions are due entirely to an increase of demand over supply," he said.

Maine Lumbermen Organize

[FROM OUR REGULAR CORRESPONDENT.]

BANGOR, Me., Sept. 26, 1916.—Lumbermen of Maine and New Brunswick are planning to organize an association that will embrace all branches of the lumber business, with membership including mill owners, operators and timberland owners. The preliminary meeting for the purpose of forming this organization has just been held in Bangor, and a second meeting will be held early next month.

A. W. Brown, of Van Buren, an official of the St. John Lumber Co., the largest lumber company in New England, acted as chairman of the first meeting, and others who were present included John Smith, manager of the Sterns Lumber Co., Bangor; James Q. Dulnac, president of the Bangor Lumber Co., of Bangor; Fleetwood Pride, of Houlton; Mr. McWilliams, of the Ashland Lumber Co., and John Morrison, of Fredericton, N. B.

The organization will be international in character, and for the mutual benefit of the lumbermen members. It is intended to have a big, live and progressive organization. F.

Eastern Manufacturing Company's Improvements

[FROM OUR REGULAR CORRESPONDENT.]

BANGOR, Me., Sept. 26, 1916.—The Eastern Manufacturing Co. is to erect a two-story office building at its plant in South Brewer, excavation for which is now under way. The present office building is to be remodeled into a laboratoroy for the Massachusetts Institute of Technology extension students, who will carry on research work here according to an agreement recently made. The building will be 47 by 95 feet, with brick walls and concrete foundation, and a large garage in the basement, which will afford room for 16 machines. F.

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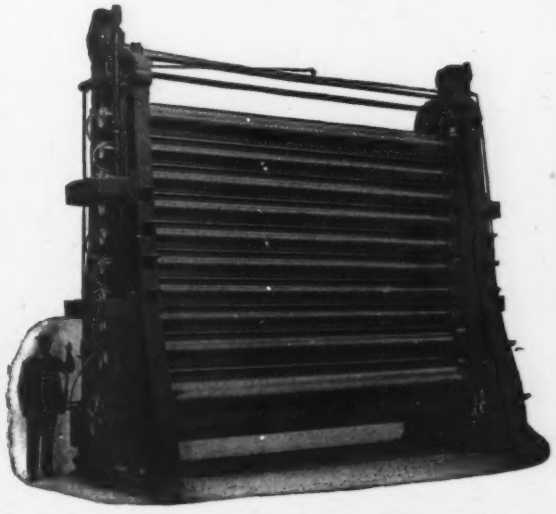

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CONDITIONS POINT TO HIGHER PRICED WOOD

Lumberjacks Drawing $35 to $40, and Are Scarce at That—The Condition Is General, and Unless There Is a Decided Change, the Price of Pulp Wood Will Probably Go to a Higher Level—Men Are Not Attracted by the Woods Proposition.

[FROM OUR REGULAR CORRESPONDENT.]

APPLETON, Wis., Sept. 26, 1916.—With lumberjacks drawing from $35 to $40 per month and a scarcity of them at that, indications are the coming winter, unless industrial conditions change very materially in the meantime, will be an expensive one on the paper mills. In other words, pulpwood from the northern woods is bound to go skyward. Last week a representative of a big northern lumber company was in this city in search of men for a new camp about to be opened. Usually he has been able in Appleton to corral a crew of 15 or 20 men, but this time he had to be content with only three men, despite the fact that the wages offered this year are from $5 to $10 per month more than ever offered before. "I am finding the same condition everywhere," declared the lumberman, while telling of his troubles in manning his camps. "Men appear to be satisfied with what they are getting in cities and don't care to listen to a woods proposition. I am apprehensive we are going to have a hard time getting enough men this fall and winter unless we make the wages altogether out of all reason."

"I hope what they are saying about the scarcity of woods labor and the high wages they are obliged to pay is not to be a permanent condition, for I can see where we will be the fellows who will have to pay the freight," declared a local paper manufacturer this morning when told of the difficulty lumbermen are having getting enough men for the early season camps. There is still a fairly good supply of pulpwood in the various mill yards of this vicinity, but by the time the winter cut is due every yard here will be cleaned out. In other words, mill men will have to provide themselves with the expensive cuts of the coming season in order to keep their plants going. S.

Norwich Jottings

[FROM OUR REGULAR CORRESPONDENT.]

NORWICH, Conn., September 25, 1916.—The Uncas paper mill of the American Straw Board Co. is running three machines to their full capacity. The oldest, or No. 1 machine, has been taken down and shipped to another branch of the concern.

The Norwich paper box factory has just completed an addition to its factory in Norwich. The new addition is 40 x 20 feet in size, and will accommodate several additional machines. They have also added a large delivery motor truck to their equipment. I. F. C.

Boston Paper and Paper Stock Markets

[FROM OUR REGULAR CORRESPONDENT.]

BOSTON, Mass., Sept. 25, 1916.—The paper market has shown some improvement during the past week, and prices show some advance. Soft white shavings show a material advance, and rope is rapidly advancing. Rags, however, are about the same as last week, as are also burlap and gunny bagging. Book stock, ledger stock, mixed papers and other grades of papers are in fair demand. C.

Woodpulp imports at Shanghai in 1914, were valued at $59,114, and in 1915, at $66,691.

Drawback Allowances on Paper and Boards

[FROM OUR REGULAR CORRESPONDENT.]

WASHINGTON, D. C., Sept. 18, 1916.—Acting under Senate resolutions of January 10 and July 5 of the last session of Congress the Secretary of the Treasury has had compiled a list of the drawback allowances paid during the fiscal years ending June 30, 1914 and 1915, for the first six months of 1916 and an estimate of the amount to be paid for the remaining six months of that fiscal year. The items and firms to which drawback has been paid and is due are as follows:

For the Year 1914

Cigarette paper—M. Gluckman, $76.98; Gluckman & Son, $12.36; L. Kehlman, $12.84; Max Spiegel, $97.41; and the Western Pipe Company, $35.72.

Copy books—Bailey Manufacturing Company, $175; Boorum & Pease Company, 209.83; Gresham Blank Book Company, $18.15; National Blank Book Company, $455.54; Charles A. Stratton & Company, $234.97.

Paper—International Paper Company, $65.34.

Paper bag linings—Arkell Saftey Bag Company, $1,283.91.

Paper bags—Union Bag & Paper Company, $15.25.

Blue print paper—Keuffel & Esser Company, $488.22.

Book paper—West Virginia Pulp & Paper Company.

Fly paper—O. W. Thumb Company, $1,953.52 and $10.50.

Newspaper—International Paper Company, $66.23.

Waxed paper—Hammerschlag Manufacturing Company, $54.59.

Wrapping paper—M. D. Knowlton Company, $297.99; American Writing Paper Company, $35.49.

Roofing paper—H. W. Johns-Manville Company, $10.45.

Wall paper—American Lincrusta, $47.58; Gledhill Wall Paper Company, $69.55.

For the Year 1915

Cigarette paper—Gluckman & Son, $18.39; M. Gluckman, $98.70; Max Spiegel, $88.66.

Copy books—Boorum & Pease Company, $68.66; Gresham Blank Book Company, $104.88; National Blank Book Company, $233.78; H. O'Hashr & Co., $7.41; Charles A. Stratton & Co., $61.98.

Fly paper—O. W. Thumb & Co., $3,393.75.

Paper bag linings—Arkell Safety Bag Company, $329.67.

Blue print paper—Keuffel & Esser Company, $364.78.

Wall paper—American Lincrusta Company, $90.38; Gledhill Wall Paper Company, $31.63.

Wrapping paper—M. D. Knowlton Company, $705.19.

For the First Six Months of 1916

Beaver board—Beaver Board Company, paid, $1,604.21; due, $767.90.

Cigarette paper—Gluckman & Son, paid, $55.11; due, $50.60; M. Gluckman, due $698; Max Spiegel, $47.73; Western Pipe Company, paid $62.22, due $35.

Copy books—Boorum & Pease Company, due $130.44; Gresham Blank Book Company, due $60.62; National Blank Book Company, paid $44.52; due $217.28; Charles A. Stratton & Co., paid $24.60, due $85.44.

Fly paper—O. W. Thumb & Co., paid $303.39, due $377.63.

Wall paper—American Lincrusta Company, paid $19.99, due $2.87; Gledhill Wal Paper Company, $75.77.

Paper—Nashua Gummed & Coated Paper Company, $254.15.

Paper bag linings—Arkell Safety Bag Company, $41.07.

Blue print paper—Keuffel & Esser Company, $362.47, due $239.36.

Wall board—Beaver Board Company, paid $151.98, due $193.

Estimates due for the last six months of the fiscal year ending June 30, 1916, include: Beaver board, $1,151.85; cigarette paper, $86.37; fly paper, $566.44; paper, $100 blue print paper, $259.04; wall paper, $4.30; tissue paper, $300; wall board, $250. L.

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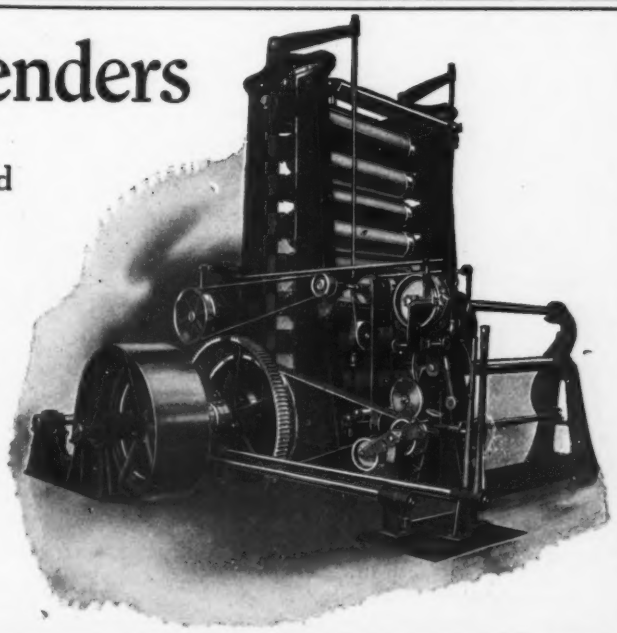

Obituary

Frank L. Worthy

[FROM OUR REGULAR CORRESPONDENT.]

HOLYOKE, Mass., Sept. 25, 1916.—Frank L. Worthy, one of the older prominent paper manufacturers of this vicinity, died Saturday morning at the Stratford Hotel in Bridgeport, Conn., after a few hours illness. He went to Bridgeport Friday morning, and caught a severe cold which turned into acute pneumonia. Mr. Worthy's home has always been in West Springfield and he was identified with many business interests in Springfield and vicinity. Mr. Worthy had the good fortune of inheriting a large fortune from his father who built the Worthy Paper Company, now the Worthy Paper Company Association of Mittineague. He increased his wealth through good business ventures which included the management of the Worthy Hotel in Springfield, the organization of the Ramapogue Ice Company and others. In 1885 Justin L. Worthy, father of the deceased, built the Worthy Paper Company and devoted his entire time to the manufacture of paper. Upon the death of his father, Mr. Worthy inherited the Worthy Paper Company, but sold out his controlling interest some years ago. He was 53 years old, and is survived by his widow, one son, Morgan Worthy, and a sister, Mrs. George L. Wright, both of Brooklyn, N. Y. A.

Martin V. B. Williamson

Martin V. B. Williamson, for years identified with the wholesale paper business, died Friday in his eighty-second year at his home, 1077 East Fortieth street, Brooklyn, N. Y., where he lived with a daughter, Mrs. Henry Powles, Jr. He was born in Franklinville, now Laurel, L. I., a son of the late Samuel and Experience Williamson. He came to Brooklyn 40 years ago and established himself in business as a dealer in paper. He was for years a member of the old Brooklyn Tabernacle. He is survived by a widow, Caroline, and one daughter.

Albert J. Deppert

RUTHERFORD, N. J., September 25, 1916.—Albert J. Deppert, superintendent of the printing department of the Paterson Parchment Paper Company, of Passaic, died yesterday at his home in Carlstadt. Yesterday was his fifty-ninth birthday. Mr. Deppert was born in Carlstadt, and lived there all his life. For 22 years he had been connected with the Paterson Parchment Paper Company, of which a brother-in-law is president.

Underwood Paper Co. Will Enlarge Plant

[FROM OUR REGULAR CORRESPONDENT.]

PLATTSBURG, N. Y., September 25, 1916.—The Underwood Paper Company, of which Thomas F. Adriance is vice-president and general manager, owner of the paper mill plant at the Main Mill, formerly owned by the Progressive Paper Company, has awarded a contract to R. H. Rhinelander, of Glens Falls for the erection of a two-story 100 x 800 mill and a two-story 20 x 50 machine shop to cost in the neighborhood of $70,000. The new work is already under way and will be pushed to completion with all possible speed.

Ha! Ha! Bay Sulphite Co.'s Plant

The Ha Ha Bay Sulphite Company is getting along well with the construction of its new sulphite mill at Bagottville, Que. The company is getting boilers and most of its machinery from England, but the plant will not likely be in operation till next Summer.

New York Jottings

John E. Linde was elected treasurer of the J. E. Linde Paper Company, at 84-90 Beekman street, at the annual meeting of the stockholders last week. He succeeds the late S. Dana Kimball, of Castle Point Terrace, who was killed in an automobile accident on the Bellville Turnpike on Decoration Day eve. Bertram E. Linde, another brother, was elected secretary of the concern to fill the position made vacant by the promotion of his elder brother.

* * *

E. Solomon, president of A. Solomon, Inc., dealers and importers of paper mill supplies at 140 Nassau Street, sailed for Europe on the steamship La Touraine. Mr. Solomon will be in France for several months attending to the business of his concern.

Champion Fibre Company's Employees' Outing

[FROM OUR REGULAR CORRESPONDENT.]

CANTON, N. C., Sept. 9, 1916.—All the employees of the Champion Fibre company of this place and their families were given an outing on Labor Day, when the management provided two special trains to Lake Junaluska, the new assembly grounds of the M. E. Church, south. Transportation for a total of 1,600 people was furnished by the company and at least 400 to 500 went by automobiles and otherwise, making at least 2,000 people who enjoyed the varied program, including field sports, baseball, tennis, boating and other amusements.

The proposition of the company to send two monster free excursions, loaded down with Champion employees, families and friends, to Lake Junaluska to enjoy a big field day, picnic and celebration in honor of Labor's strong right arm, met with an enthusiastic reception. The trains left at 7 and 8 a. m. and, returning, left the lake at 5.30 and 6.30 p. m. Besides the ten passenger coaches, two baggage cars were required to haul the lunch baskets.

A stellar feature was an eloquent address by Dr. Calvin B. Waller, pastor of the First Baptist Church of Asheville. His subject was The Man of the Hour—the laborer who contributed to the service of the race.

The crowd felt the absence of the band, an asset of which Canton boasted with pride, but since practically all the members of the local musical organization have been drafted into the service of the country, as members of the National guard, a sense of pride atoned for the loss.

Another feature that attracted many was the moving picture show, also held in the auditorium. Excess of light hindered to some extent in projecting the pictures clearly, but by using tag board to cover the open sides of the building, the audience was enabled to observe a number of interesting pictures, including two "Safety First" reels.

The celebration was unlike any previously given by the Champion company and was voted "the best yet" by the big crowd. The "Safety First" movement so strongly advocated by the company and their employees throughout the plant, was put forth in its minutest detail on this day, with the excellent results that not the slightest disorder nor a single accident marred the day's festivities.

The various committees were as follows:

General Committee, R. J. Sprang, J. N. Lilly, E. Price, Charles Westmoreland and J. Alexander.

Reception Committee, R. B. Robertson, C. S. Bryant, A. D. Wood, Joseph Clark, T. Marr, H. Kilday, William Battison, E. M. Geier, G. M. Trostle and N. R. Wild.

Safety First Committee G. W. Phillips, chairman, the members of the General Safety Committee and the Safety Squads. J. R.

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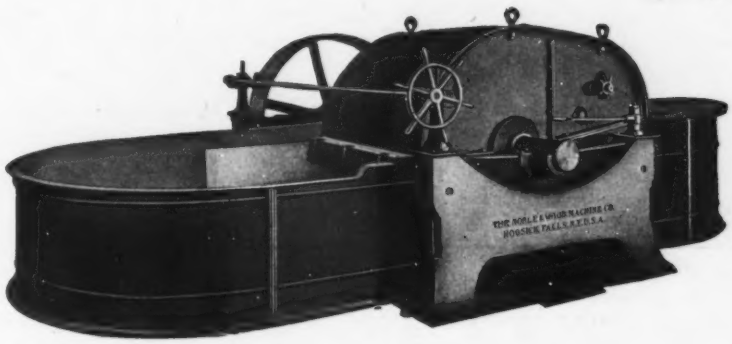

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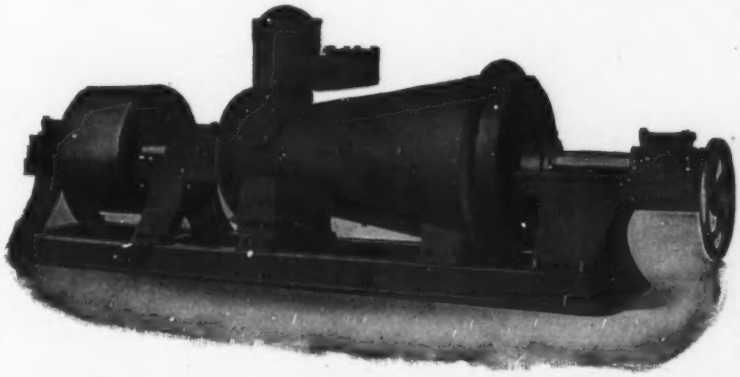

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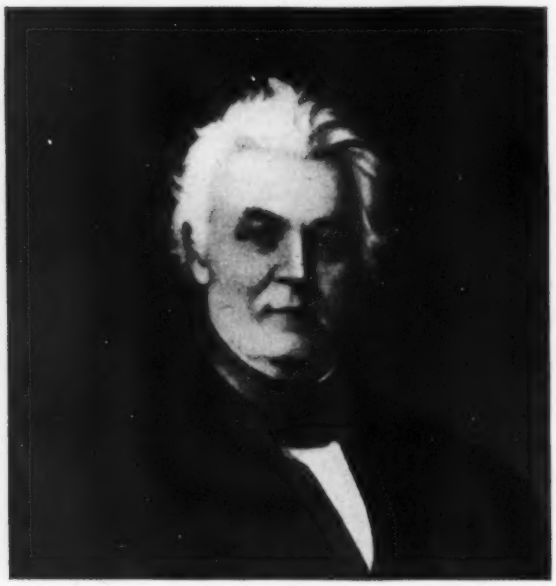
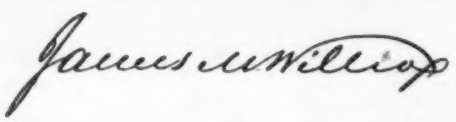
CHAPTER TEN

(*Continued.*)

The Ivy Mills of the Willcox family in Chester, Penn., were still at the height of their prosperity at this time, more than one hundred years from their beginning, and in every way they still ranked among the leading establishments of the country. On preceding pages[106] reference has been made to the succession of ownership after





1800. Joseph Willcox, son of Mark Willcox and grandson of Thomas Willcox who built the mill in 1728, came into the business in 1808 and his brother, John Willcox, joined him in 1815. Another brother, James M. Willcox, became manager of the mill in 1826 upon the death of his brother, and inherited the property in 1827 when his father died. After the death of James M. Willcox, in 1854, the mill was run by his sons, Mark, James M. and Joseph Willcox, under the firm name of J. M. Willcox & Sons, until 1859. Then it passed into the hands of a younger son, Henry B. Willcox, who continued to operate it until 1866 when the business of hand-made paper was abandoned. For nearly one hundred years and in the possession of three generations of the Willcox name, the Ivy Mills were mostly devoted to the manufacture of hand-made bank-note paper, and in this they were pre-eminently distinguished. The record is remarkable and has not been surpassed, even if rivalled, by any other concern in the industry.

In 1829 the old mill, which had been running one hundred years without interruption, was torn down to make way for another building on the same site. Two other buildings were added at Glen Mills, two and one-half miles from Ivy Mills, one in 1837 and the other in 1845. In both these, machine-made paper was produced. During the first year of the civil war the demand from the United States government for bank-note paper was so large that the facilities of the "hand-made" mill were overtaxed and much of the paper was machine-made in the two mills that had been last built. The Glen mill was in operation into the twentieth century but no longer by those of the Willcox name.

Paper-making in Indiana was begun by Isaac Mooney in 1826. Mooney, who had been employed in paper-mills on the Little Miami river in Ohio, went to Indiana and there erected a two-vat mill, the first in the state, on the Big creek, about twelve miles north of Madison. Within a year Mooney died, a suicide, and his mill was bought by Alfred McDaniels who had a paper-warehouse in Cincinnati and was also selling agent for Kugler of Milford and Phillips & Spear of Cincinnati. McDaniels, after a short time, sold the mill to Hezekiah Stout who converted the plant into a grist-mill, that being the end of the first attempt to start the manufacturing in the Hoosier state.

In 1827 a second two-vat mill was built, by John Sheets, a native of Virginia, who had been living in Warren county, Ohio. This was located on Indian Kentuck creek, seven miles east of Madison. In 1832 a machine was put in and the first air-dried binders' boards in In-

(*Continued on page* 54.)

[106] See Chapter One.

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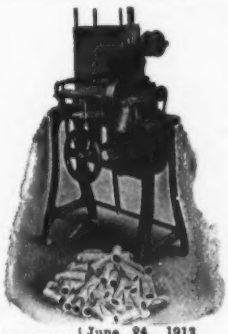

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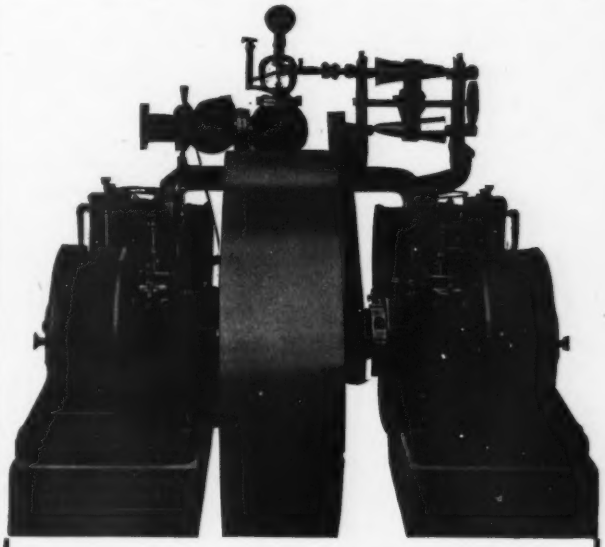

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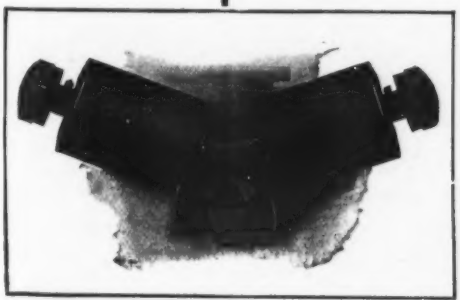

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A HISTORY OF PAPER MANUFACTURING IN THE UNITED STATES

(*Continued from page* 52)

diana were made. Later, this mill also became a grist-mill.

Leeds, Jones & Bissell built a one-vat mill in Richmond, Ind., in 1831. The mill had a single one hundred and twenty-five pound beating-engine and within ten years another vat, a second engine, a wet-machine and a fire-dryer increased the plant. These additions indicated the general character of the gradual improvements in all the small mills of the western country in this period. In 1837 the business of this mill was incorporated and, in the possession of various owners, among whom were J. R. Mendenhall, Thomas Newman, and Charles Nixon, it existed until after the middle of the century.

Another mill in Indiana was built between 1835 and 1840, near Madison, by James Hamilton and Henry Jackman. For three years only it was operated on wrapping-paper and then was abandoned. Other mills of Indiana in this second quarter of the century were: the Spier in Brookville, Franklin county, which was equipped with machinery brought from Cincinnati in 1834; that of William Sheets and Daniel Tondes in Indianapolis, from 1838 to 1866, the machinery finally being removed to Illinois; that of Daniel Tondes in Lafayette, in 1841, which survived under other owners, Wilson, Hanna and Barber, until 1874, being run on writing, print and wrapping; that of Hanna & Wilson, which made print and wrapping until it was burned in 1857; a second mill erected in Indianapolis by Thomas McIntyre and Jeremiah McLane, two partners, whose special qualifications for making paper seemed to be that one—McIntyre—was superintendent of a deaf and dumb asylum while the other—McLane—was a silver-smith.

Several other mill enterprises in Indiana dated from the mid-century. For about twenty years, Rhinehart & Robertson, Rhinehart & Wood and Rhinehart & Bowen successively operated the first mill in Delphi, built by George Robertson in 1846, burned in 1849 and rebuilt in 1851. The mill was run mainly on wrapping and news. Another mill in Delphi was built in 1853 by Robertson & Wood. In 1859 Beckett & Gridley built the third mill in Delphi, equipping it with four engines and a sixty-two inch double cylinder. Both owners were spiritualists, and it has been said that while the mill was under construction they held nightly seances and were instructed by ghostly advisers in the work of building and setting up the plant. But their familiars appear to have been evil spirits for the mill was a failure from the start and within a year was burned.

The first mill in Logansport was built in 1857 by William Archer & Son and was operated, first by the Archers and then by James L. Baldwin, until 1868 when it was dismantled and the building transformed into a distillery. A second mill near Logansport was owned and operated by Eldridge and Bachman. The first mill in Elkhart was built in 1850 by E. R. & C. Beardsley. It was located on Christiana creek and had a fifty-six inch cylinder. Six or seven years later another mill was added under the same roof. Later, a sixty-two inch machine was put in for the purpose of running on print-paper, the other machine being used exclusively on wrappings. The mills were the foundation of the Elkhart Paper Company which became the owners in 1868 and enlarged and improved the plant.[197]

A pioneer Methodist preacher named Lamden founded the industry in West Virginia. He was proprietor of a paper-mill built in Wheeling, on the Ohio river, in 1830. His son, Christopher Lamden, had learned the trade of paper-making by hand in the old mill in Steubenville, Ohio, and by machine in Massachusetts. The Wheeling mill was equipped with a machine. The Lamdens made tea and wrapping-paper and found a ready market for their goods. In 1835 the mill was burned but it was rebuilt in the following year and was then known as the Virginia mill. Afterwards it passed into other hands and made bonnet boards and wrapping-paper.

In 1832 the Fulton mill was built by Alexander Armstrong, Archibald Fisher, Joseph Morrison and Frederick Trendley, the last named being the practical paper-maker and the superintendent. During the next twenty-five years or more the mill passed through several hands, among its successive owners being R. Crowl, the Armstrong brothers, Levis, Little & Co. and Spence & Hanna. At the height of its activity, it was run on both fine and printing papers, its daily capacity being about one thousand five hundred pounds of news.

Early efforts to start paper-making in Kentucky were not pre-eminently successful and the industry in that state had a very precarious existence.[198] After the first mill in Louisville, in 1814, a second in that city was started about 1830 or 1832 and had a brief and inglorious career. Originally it was a saw-mill located in the woods adjoining the town, and when all the trees which could be cut for lumber were used, Bainbridge & Syler, the proprietors, changed their saw-mill into a paper-mill. It ran for about three years and was then burned. The third mill in Louisville, built about 1836, was operated by Nixon & Kellogg and was subsequently purchased by the owner of *The Louisville Advertiser*. Later it became the property of Prentice & Co.; in 1840 it was rebuilt at a cost of $9,000, but a few years later it was sold under the hammer to Isaac Cromey for $14,000. This was the first mill operated in Louisville by Dupont & Co. In the winter of 1832-33 a flour-mill in Mayville, Jessamine county,

[197] *The Paper Trade Journal*, October 16, 1897, p. 104.

[198] See Chapter Eight.

(*Continued on page* 58.)

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ONE MACHINE TENDER AND ONE BACK TENDER wanted on cylinder machine running crepe tissue. First class positions for the right men. Address P. B. C., care Paper Trade Journal.

SITUATIONS WANTED

SALESMAN with trade among wholesale stationers in New England, Atlantic and Pacific Coast wants connection with paper, papeterie or blank book manufacturers. Address R. B. Cowley, Jr., 302 West 22d St., New York.

POSITION WANTED by an energetic young man as night superintendent in a Sulphite mill, or any other position with responsibility. Has several years' experience and will be glad to furnish references. Address E. T. S., care Paper Trade Journal.

A CHEMICAL ENGINEER now assistant superintendent of an electro chemical plant who has had ten years' practical, efficiency and research experience in cellulose industries desires position of responsibility with mill interested in mechanical and chemical betterments. Will start at a salary of $100 per month till ability has been proven. Address B. V. Q., care Paper Trade Journal.

POSITION WANTED as boss finisher, at present employed as assistant in one of largest writing paper mills in New England. 17 years' experience. Address B. F. A., care Paper Trade Journal.

ROOFING FELT, SUPERINTENDENT, practical experience, highest references, wants position. Address P. E. H., care Paper Trade Journal.

TRAVELING SALESMAN, now employed, would like to make change. Am selling at present Sizes for Paper and Coated papers and English and Domestic Clays. Understand the rag trade. 20 years' experience among paper mills and coating plants in United States and Canada. Address L. H. R., care Paper Trade Journal.

PAPER SALESMAN OPEN FOR ENGAGEMENT, well acquainted among the wholesale and retail stationers and printers in states of Massachusetts, Connecticut and Rhode Island; also New York City. Address C. S. T., care Paper Trade Journal.

AM IN POSITION TO REPRESENT manufacturers direct in states of Georgia and Alabama. Paper bags, envelopes, toilet papers, tablets and writing paper on brokerage. Selling to jobbers only. Address Z. F. A., care Paper Trade Journal.

MASTER MECHANIC of 12 years' experience in charge of equipment and maintenance of new pulp and paper mills, desires position, sober and reliable. References furnished, correspondence solicited. Address Maintenance, care Paper Trade Journal.

SALESMAN WHO HAS TRAVELED New York State for over fifteen years selling paper to the jobbing trade wishes to sell direct for mills on commission basis. Address Paper Salesman, care Paper Trade Journal.

(CONTINUED ON PAGE 57.)

FOR SALE

1—92" Fourdrinier **PAPER MACHINE,** first and second presses; gun metal and rubber rolls; 10 dryers, 36" x 86"; Calenders, Reel, Slitter, Marshall drive.

1—62" Moore & White **CUTTER;** 1—58" Hamblet duplex.

1—No. 2 Daniels **RAG CUTTER.**

2—Jones **BEATERS,** double lighters, 1,000 lbs.

3—Jones 500 lbs. double lighters.

2—large **HYDRAULIC PULP PRESSES,** Boomer & Boschert.

1—48" Acme **TRIMMING PRESS;** 1—53" Seybold; 1—48" Cranston; 1—38" Cranston; 1—36" Acme.

1—Connelsville rotary **SUCTION PUMP** 10" x 14".

2—7' 4" x 21' 6" Harrison Loring **ROTARIES.**

110—**PRESS ROLLS,** various sizes and types.

Lot of gun metal and rubber **COUCH** and Breast **ROLLS,** various sizes.

FRANK H. DAVIS

175 Richdale Ave., No. Cambridge, Mass.

We have taken from our customers for whom we built new machinery a lot of which we have overhauled.

We enumerate below only a partial list.

Write us if there is anything else you want.

Beaters, two with rolls 65" dia. 54" bar, one with roll 48" dia. 54" bar, two 45" dia. 44" bar, two 40" dia. 40" bar, one 44" dia., 48" bar, three 40" dia. 48" bar, iron sides, one 49" dia. 48" bar, one 54" dia. 60" bar, one 54" dia. 54" bar. One Claflin Four new 61" dia. 48" bar, cypress sides. New Umpherstons, 45" dia. 66" bar. **Calenders,** three stacks 84", two 80", two 72" and many others. **Cutters,** one 43" Finlay, one 37" Finlay, 42" Moore & White, one 45" Finlay, one 112" Dillon. **Coater,** one 43" Waldron double coater. **Cylinder Moulds,** five 26" x 84", and other sizes. **Chippers,** two chipoers. **Digesters,** three digesters. **Drives,** eight Reeves' and other makes. **Dryers,** about 150 different sizes. Fourdrinier, one 136", one 84", one 80". **Jordans,** Emerson, Horne, Dillon, Marshall, Baby Jordan. **Machines,** one 84" machine with dryers 48" x 84", one 72" with 30—36" dia. dryers, and several others. **Pumps,** three duplex self-contained stuff pumps, three Triplex self-contained suction pumps, one 1000 gal. Worthington, also tank pump 10 x 16 x 16 x 18 Knowles, two large size Underwriter Fire pumps, fifteen fan pumps. **Screens,** three open side Packer screens 12 plates, 12 x 43", plates almost new, two 8 plate 12 x 43 Packer, one 8 plate 12 x 43 Baker and Shevlin, one single cylinder Wandel screen, thoroughly overhauled. **Winders,** 118" Single drum Beloit, 62" two drum Beloit winder, 120" Kidder rewinder and slitter, other makes and widths. **Supercalenders,** one 7 roll Granger stack, rolls 51" face, one 8 roll stack, rolls 84" face. Large lot of new split iron pulleys, sprocket chains. Some new wooden pulleys with friction clutches.

MILLS MACHINE CO.

LAWRENCE, MASS., U. S. A.

SITUATIONS WANTED

POSITION WANTED—Manager, assistant, or salesman, 15 years' experience, correspondence, advertising, purchasing, systematizing, sales. Wholesale and manufacturing experience. I am the man you want. Address W. R. P., care Paper Trade Journal.

SUPERINTENDENT—Experienced on kraft, water finish fibres, book, ledger, parchment, fibre for vulcanizing, open for position. Alive and up-to-date. Address Vulcanizing, care Paper Trade Journal.

ASSISTANT SUPERINTENDENT, night superintendent or superintendent. Lifetime's practical experience, fourdrinier or cylinder paper. Technical education, papermaking and chemistry. Can get results. Address Technical, care Paper Trade Journal.

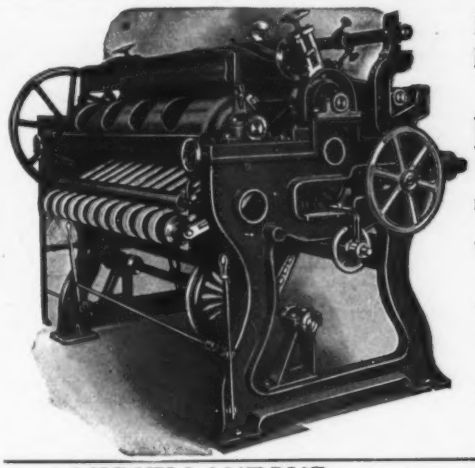
SUPERINTENDENT with large experience in fine mills, now employed with mill making specialties, would like to make a change. Fine mill preferred. Can get results. Address R. M. H., care Paper Trade Journal.

GROUND WOOD FOREMAN DESIRES POSITION; fifteen years' experience; can furnish best of references. Steady, sober and married. Can get good results. Address Results, care Paper Trade Journal.

SITUATION WANTED—A1 Superintendent who understands the making of specialties, machine and loft dried papers with best New England references. Address Cabot, care Paper Trade Journal.

SUPERINTENDENT of experience wants position in mill making news, hangings, book or specialties; understand making all grades of papers and have good mechanical ability. Address D. J. P., care Paper Trade Journal.

MASTER MECHANIC DESIRES POSITION, expert construction, reconstruction, economical maintenance, competent to keep mechanical part to its highest efficiency, ten years' master mechanic in mill making news and all kinds of cylinder papers, five years master mechanic in writing and bond mill, first class recommendation and reference. Address Expert, care Paper Trade Journal.



H. C. CLARK & SON MACHINE COMPANY

MANUFACTURERS OF

Paper Mill Machinery

LEE, MASS.

REVOLVING PAPER CUTTERS
RAG CUTTERS
CYLINDER PAPER MACHINES
WASHING AND BEATING ENGINES
CHILLED IRON AND PAPER CALENDERS
FAN AND STUFF PUMPS
ENGINE ROLL BARS AND BED PLATES
CYLINDER MOLDS
MARSHALL DRIVES
SLITTERS AND REWINDERS
REELS
DRYERS WITH IMPROVED PACKING BOXES
WET MACHINES
GUN METAL AND RUBBER ROLLS
ROLLS REGROUND

MISCELLANEOUS

FOR SALE—Rare opportunity—Sulphate Pulp Pine, 25,000 acres. North Carolina Tidewater. Address G. W. Stokes, 16 W. 102d St., New York.

FOR SALE—Packer open side 14 plate, also 12 plates Screen 12 x 43 plates for same cut .012. Can be seen running and delivered in a week. About a year old. 2 Columbia Kaukauna Slitting and Rewinding machines. One trims 106" and the other 80". For large and small rolls. Lot of split iron pulleys, 34-44-48-54 and 60" diam., 14 to 18" face, 4 7-16" bore. Solid pulley, 60" diam., 16" face, 5 15-16" bore. Solid pulley, 72" diam., 16" face, 4 15-16" bore. Lot of square 2½" shafting, 12 ft. long. Three pieces of 4 7-16", 11 ft. long, can be turned to 3 7-16". 1 large Cut Gear, 43 teeth, 4" pitch, 16" face, 5½" bore. 2 large Mortise Gears, 49 teeth, 4" pitch, 16" face, 5 15-16" bore. Address McDowell Paper Mills, Manayunk, Pa.

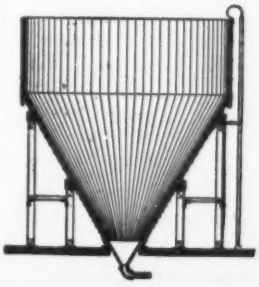
MISCELLANEOUS

FOR SALE—One or more packer 10 plate, open side Diaphragm Screens, Witham Vat and fasteners, cut board stand and box. Plates 12 by 40 by 5/16 cut .014 or .021. Practically new and in first class condition. Attractive prices. Address Screen, care Paper Trade Journal.

FOR SALE OR RENT. Paper mill formerly operated by the late Simon D. Paddack. Mill is complete and ready to operate having good water power and 125 horse-power steam. Situated within five miles of Syracuse and near New York Central Railroad and Erie canal. Owners would also consider a proposition to operate the mill on shares or in connection with some manufacturing business utilizing paper, the property having convenient buildings for manufacturing purposes. Address Amboy Paper Mills, White Mem. Bldg., Syracuse, N. Y.

(CONTINUED ON PAGE 59.)

NEW ENGLAND TANK & TOWER CO.



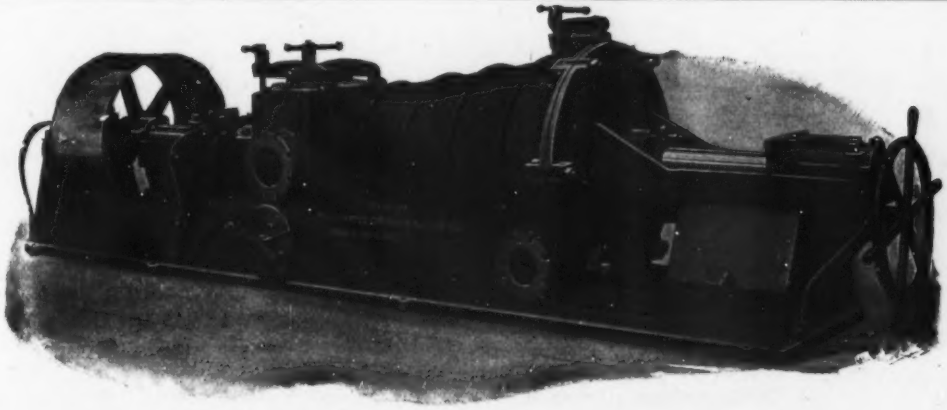
WOOD TANKS
FOR ALL
PURPOSES

Everett Station, Boston, Mass.

PAPER BAG MACHINERY
Flat and Square Satchel Bottom
Single and Duplex all Rotary Machines

We guarantee very high production and very low percentage of waste.
Jobbers supplied with Bag Machines anywhere in the United States, any number, part payment down, balance of payment from one to five years, to responsible parties.
We claim to have the fastest machines made.

LOCKPORT MACHINE CO. Wm. Muirhead, Prop.
Lockport, N. Y.
TORONTO TYPE FOUNDRY CO., 70 York St., Toronto, Canada
Agents for Canada
CANADIAN-AMERICAN MACHINERY CO., London, England
Foreign Agents



THE
Shartle Bros. Machine Co.
Middletown, Ohio

A HISTORY OF PAPER MANUFACTURING IN THE UNITED STATES

(*Continued from page* 54.)

about seventeen miles from Louisville, was changed into a paper-mill, having an equipment of two engines and a cylinder machine. It was operated by the Messrs. Warnack for about two years and then changed back into a grist-mill.

It is small cause for wonder that, after the lugubrious failures of 1810 and 1820, no attempt was again made to gather statistics of manufacturing throughout the country until the census of 1840 was ordered. But the third decennial effort was not much of an advance over those that had preceded it, being meagre in detail and very inaccurate. The returns gave the aggregate amount of capital invested in all manufacturing in the United States as $267,726,579 and the number of persons employed as 399,307. The actual facts, however, were undoubtedly in excess of those reported by the official enumerators.

The number of paper-mills reported were four hundred and twenty-six; men employed 4,726, with no record of female employees, of whom there were many; capital invested, $4,745,239; value of product, $5,641,495. The distribution of the industry in the different parts of the country was as follows:

States	Mills	Capital	Employees	Product
Maine	6	$20,000	89	$84,000
New Hampshire	13	104,300	111	150,600
Vermont	17	216,500	195	179,720
Massachusetts	82	1,082,800	967	1,659,930
Rhode Island	2	45,000	15	25,000
Connecticut	36	653,800	454	596,500
New York	77	703,550	749	673,121
New Jersey	41	460,100	400	562,200
Pennsylvania	87	581,800	794	792,335
Delaware	1	16,200	15	20,800
Maryland	17	95,400	171	195,100
Virginia	12	287,750	181	216,245
North Carolina	2	5,000	6	8,785
South Carolina	1	30,000	30	20,000
Tennessee	5	93,000	87	46,000
Kentucky	7	47,500	47	44,000
Ohio	14	208,200	305	270,202
Indiana	3	68,739	100	86,457
Illinois	1	.....	...	2,000
Michigan	1	20,000	6	7,000
District of Columbia.	1	5,000	4	1,500
Total	426	$4,745,239	4,726	$5,641,495

In addition there were other manufactures of paper, including playing cards, etc., to the annual value of $511,597, of which Pennsylvania produced $95,500, New York, $89,637, Ohio, $80,000, Connecticut, $64,000, Massachusetts, $56,700, Indiana, $54,000, Vermont, $35,000 and Tennessee, $14,000. Apparently there were no mills in Arkansas, Alabama, Florida, Georgia, Mississippi, Louisiana, Iowa, and Wisconsin.[190]

[190] Freeman Hunt: *The Merchants' Magazine*, VI., pp. 290 and 371; IX., pp. 140 and 220. United States Census Office: *Compendium of the Enumeration of the Inhabitants and Statistics of the United States, Sixth Census*, (1841), p. 363.

(*To be continued.*)

Chicago Personals

Mr. Eckert, of the Franklin Coated Paper Company, was a visitor over the week-end, calling on the Chicago trade.

W. A. Stuart, of Brown & Stuart, Cincinnati, spent a few days in Chicago this week.

John Omwake, of the W. B. Oglesby Paper Company, Middletown, Ohio, visited the jobbing trade on his way west this week.

Robert Wadsworth, who has been connected with the Bradner-South Company for the last 20 years, has taken the post formerly occupied by Mr. Gimlin, who resigned recently.

Cliff Field, of the Hamilton & Smith Paper Company, Omaha, was a welcome visitor to town a few days ago.

Douglas Wray, Jr., secretary of the Douglas Wray Paper Company, has just returned from a successful fishing trip in northern Wisconsin. He was accompanied by Oliver W. Hessell, associated with the same company, and they report fine catches of bass and "muskies"—the largest muscallonge weighing 20 pounds under the microscope.

Jerome W. Power, of the staff of the Paper Mills Company, now wears the smile that won't come off. He has just returned from a trip through the Georgian Bay country. But he did not make the trip alone; Mrs. Jerome W. Power accompanied him on their wedding trip.

B. A. Judd, of the Petrequin Paper Company, Cleveland, was in the city for a day or two recently on his return trip from calling on the paper mills in the northwest.

Robt. H. Butterworth, assistant manager of the Chicago office of the Champion Coated Paper Company, Hamilton, O., is away on a business trip to Minneapolis.

H. M. Gimlin, for the past 17 years in the fine paper department of the Bradley-Smith Company, accepted, on September 1, a similar position with the Dwight Bros. Paper Company here, with headquarters at 626 South Clark street. BUR.

Visitors to Boston Trade

[FROM OUR REGULAR CORRESPONDENT.]

BOSTON, Mass., Sept. 25, 1916.—Among those visiting the Boston paper trade are the following: J. C. DeCoster and E. C. Walker, American Writing Paper Co., Holyoke, Mass.; I. C. Blandy, American Wood Board Co., Schuylersville, N. Y.; H. E. Lindquist, Chemical Paper Manufacturing Co., Holyoke, Mass.; Norman Harrower, Linton Bros. Co., Fitchburg, Mass.; George E. Crafts, treasurer Orono Pulp & Paper Co., Bangor, Me.; Fred M. Temple, president and general manager, Merrimac Paper Co., Lawrence, Mass.; F. H. Purrington, New York office of the Odell Mfg. Co. C.

The Toilette Products Company, Inc., of 48 West Fourteenth Street, has filed an involuntary petition in bankruptcy. The liabilities of the company are placed at $6,000 and the total assets $4,000. Most of the claims are for minor amounts. The largest claimant is the White Paper Box Company, to whom the bankrupt concern is indebted for $412.

D. Galante, dealer in rags, formerly located at 242 Spring Street, has moved to a three-story building at 92 Watts Street.

(CONTINUED FROM PAGE 57.)

MISCELLANEOUS

WANTED—Connection with mill building to furnish from three to ten carloads manila per month from five to six points thickness. Principals desire to build adjoining plant for the manufacture of a specialty. Business to be on a strictly cash basis. Address Papetry, care Paper Trade Journal.

FOR SALE—Two Daniels Rag Cutters run together in good shape. New knives, also extra cylinder. Will sell cheap. Address Knives, care Paper Trade Journal.

FOR SALE—Two White screens, with improved oscillating device. Eight plates each 10 x 24 inches. First-class condition. Cost $1,200 each. Price for each screen with eight plates, $700, f. o. b., cars Holyoke. Address Parsons Paper Co., Holyoke, Mass.

PATENT FOR SALE—Interchangeable sign and bulletin board. Opportunity to secure sign of merit with low manufacturing cost and good selling profit. It is easy to make of paper or other materials. Address T. O. T., care Paper Trade Journal.

FOR SALE—Large powerful rag chopper for chopping gunny. Address Chopper, care Paper Trade Journal.

WANTED.—Capital to build Wrapping Paper Mill in large city with free water power. Organization of experienced men already established and purchase of output already subscribed for. Excellent returns for the investor.

Address S. W. G., care Paper Trade Journal.

FOR SALE—4-54" Vertical, special McCormick Water Turbines, 2 rights, 2 lefts, built by S. Morgan Smith Co. All gears, harness, etc. Also 2 G. E. 200 k. w., 3 phase, 60 cycle, 2,300 volt, 600 r. p. m. G. E. Generators. First class condition, shown any time. Immediate delivery. Price low. Address R. B. Hunter or John C. Murray, Fulton, N. Y.

FOR SALE—Mills at Lancaster, Pa., and Rising Sun, Md. Each equipped with 60-inch Fourdrinier machines, beaters, engines and ample steam and water power. Complete and ready to operate. Apply to the York Card & Paper Co., York, Pa.

FOR SALE—Several hundred 3" Iron Cores various lengths from 12½" up to 64". Address Keystone Paper Mills Co., Upper Darby, Pa.

Directory

Cards under this heading will be charged for at the rate of $15 per annum for each card of three lines or less, payable in advance. Each additional line $5.

Architects and Engineers.

BIGELOW, WM. C., Architect and Engineer, Specialties Paper, Pulp, Fibre Mills, Hydro-Electric, Steam Power Plants, Biddeford, Maine.

CAREY, JAMES L., Paper Mill Engineer, New Mills. Improvements in Old Mills. Appraisals. 208 North 52d Avenue, Chicago, Ill.

CHAPMAN, C. A., Inc., Paper Mill Architects and Engineers.
28 Jackson Boulevard E., Chicago, Ill.

FERGUSON, HARDY S., M. Am. Soc. C. E., Consulting Engineer. 200 Fifth Ave., New York.

HARDY, GEO. F., M. Am. Soc. M. E., Consulting Engineer. 309 Broadway, New York.

SNOW, S. M., Mill Architect, Engineer. Paper and Pulp Mills. Steam and Water Power plants. 55 Kilby Street, Boston, Mass.

STEBBINS ENGINEERING AND MFG. CO., Architects and Engineers. Paper, Pulp, Soda, Sulphate and Sulphite Mills. Power Developments. 39-40 Smith Bldg., Watertown, N. Y.

JOSEPH H. WALLACE & CO.,
Industrial Engineers,
Temple Court Building, New York.
Manufacturing Plants and Power Developments. Reports of Industrial Properties, Appraisals, etc.

Bale Ties.

WILSON, H. P. & H. F., Manufacturers of Steel Wire Bale Ties, for baling all compressible material. 544 West 22nd Street, New York City.

Boards.

MILLER PAPER CO., FRANK P., high grade specialties. Boards.
East Downingtown, Pa.

Forest Engineers.

P. T. COOLIDGE, Forest Engineer, Timber Estimating and Mapping, Boundary Surveys, Supervision of Lumbering and Stumpage Contracts. 31 Central Street, Bangor, Maine.

Guaranteed Non-Curling Gummed Papers.

IDEAL COATED PAPER CO., Mills and Main Office, Brookfield, Mass. N. Y. Office, 150 Nassau Street. 452 Monadnock Building, Chicago.

Metal Skylights and Ventilators.

WE manufacture metal skylights and ventilators for paper and pulp mills. E. VAN NOORDEN CO., 944-52 Mass. Avenue, Boston, Mass.

Patent Attorneys.

BALDWIN & WRIGHT, 25 Grant Place, Washington, D. C. Experienced in securing patents on paper machinery.

Rags, Paper Stock, etc.

BERLOWITZ, PAUL,
132 Nassau Street, New York.
Importer of Rags, Bagging, New Cuttings.

BOYLE, LUKE,
390 West Broadway, New York.

CHASE & NORTON, High Grade Shavings and Book Stock a specialty.
277 Water Street, New York.

FLYNN, MICHAEL,
54 Columbia Street, Brooklyn, New York.

GOLDSTEIN, R., & SON,
Baltimore, Md.
Cotton Rags and Paper Stock.

GRUNDY & SONS, JAMES, Chorley, England, supply new and old rags of highest quality for paper makers. Enquiries solicited.

HILLS, GEO. F.,
108-112 Cliff Street, New York.

HOFELLER, THEODORE, & CO., 206 Scott Street, Buffalo, N. Y., buy Bagging and Burlap Baling from Paper Mills, also Second Hand Bags, Brass Wire Cloth, Brass Screen Plates, Scrap Brass and Paper Mill Felts.

JACOB & CO., Alexander, Wapping, London, England. Supply all classes Waste Papers and Shavings, Paper Making Rags, etc. Correspondence Solicited. Paris Office, 3 Cite d'Hauteville.

LIBMANN, JOSEPH, & CO.,
174, 176 and 178 Hudson Street, New York.
The only house in existence which deals
EXCLUSIVELY IN NEW CUTTINGS
of every grade and description.

LIVERPOOL MARINE STORE CO., Liverpool, England. L. M. S. Wood Tag, Manila, Rope and Star Brands (Registered).

McGUIRE, MICHAEL,
100 and 102 Tenth Avenue, New York.

SIMMON'S, JOHN, SONS, Paper and Paper Stock. 28 and 30 South Marshall Street (formerly Decatur Street), Philadelphia, Pa.

Special Machinery.

DIETZ MACHINE WORKS, experienced builders of special machinery with well equipped modern shop, can quote low prices in machine building. Send drawings, 126-128 West Fontaine Street, Philadelphia, Pa.

SWIFT, GEORGE W., JR., Designer and Manufacturer of Special Machinery for Manufacturing and Printing Paper Goods. Bordentown, N. J.

Straw Pulp.

SCANDINAVIAN-AMERICAN TRADING CO., Produce Exchange, New York. All other kinds of Pulp.

CASEIN

WAREHOUSE MERCANTILE COMPANY
IMPORTERS
24 State Street **New York**
Cable Address "WISHBONE"

Kalamazoo Vegetable Parchment Co.
KALAMAZOO, MICHIGAN
Manufacturers of high grade parchment and waxed paper

WANTED SODA ASH Wire Offerings Collect
MADERO BROS., Inc., Chemical Department, **115 Broadway, New York** Telephone: Rector 5340-5341

PAPER STOCK
PACKERS OF ALL GRADES
Mendelson Bros. Paper Stock Co.
900 Michigan Blvd. Chicago, Ill.
When you want quantity and quality and lowest prices, write us.
Packing Houses and Warehouses, Chicago, Ill.

Imports and Exports of Paper and Paper Stock

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

FOR WEEK ENDING SEPTEMBER 25, 1916.

NEW YORK IMPORTS

FOR WEEK ENDING SEPTEMBER 25, 1916.

SUMMARY.

Wrapping paper ..... 1,706 cs.
Cigarette paper ..... 260 cs.
Miscellaneous paper ..... 37 cs.

WOOD PULP.

Wood pulp ..... 797 tons.

ROPE.

Rope ..... 655 coils.

BAGGING.

Bagging ..... 582 bs.

RAGS.

Rags ..... 1,185 bs.

PAPER.

Perkins-Goodwin Company, Red Italia, Genoa, 5 bs.

R. Mayer & Co., Muncaster Castle, Hong Kong, 25 bs.

American Trading Company, by same, 7 bs.

WRAPPING PAPER.

G. W. Sheldon & Co., Oscar II, Copenhagen, 1,706 bs.

Wood Pulp.

King & Harris, Oscar II, Copenhagen, 1,725 bs., 200 tons.

E. Butterworth & Co., by same, 424 bs., 55 tons.

M. Gottesman & Sons, Whidden, N. S., 3,225 bs., 322 tons.

Perkins-Goodwin Company, Ada, Gothenburg, 1,100 bs., 220 tons.

Casein.

T. M. Duche & Son, Santa Barbara, Buenos Aires, 1,000 bags, 220,000 lbs.

A. Klipstein & Co., Ardgowan, Bordeaux, 20 bags, 44,000 lbs.

BOSTON IMPORTS

WEEK ENDING SEPTEMBER 25, 1916.

Paper, Books, Etc.

W. H. Guild & Co., Pruth, Liverpool, 4 cs. books.

Little, Brown & Co., by same, 1 cs. books.

Little, Brown & Co., Devonian, Liverpool, 5 cs. books.

Stone & Downer Company, by same, 5 cs. paper and books.

W. H. Guild & Co., by same, 4 cs. books.

Lever Brothers, by same, 1 cs. paper.

American Express Company, by same, 1 cs. paper, 1 cs. books.

Hide Cuttings.

Ernest F. Russ & Co., Pruth, Liverpool, 307 bags.

Casein.

Atterbury Brothers, Santa Barbara, Buenos Aires, 201 bags.

EXPORTS

WEEK ENDING SEPTEMBER 25, 1916.

CARBON PAPER.

Italy	$131
England	2,438
Brazil	676
France	1,132
Mexico	128
Spain	1,203
Trinidad	31
Peru	153
Cuba	136
San Domingo	11
Dutch East Indies	150
Australia	649
New Zealand	128
Haiti	2
British India	33
British South Africa	123

PAPER BOARD.

England	$7,446
Bermuda	53
Brazil	11,466
Colombia	730
Jamaica	367
Spain	181
Mexico	32
Trinidad	900
Ecuador	38
Cuba	3,695
Chile	905
Australia	4,369
New Zealand	1,127
Venezuela	100
France	1,306
Argentine Republic	2,237
British South Africa	554

PAPER HANGINGS.

Brazil	$300
Colombia	1,025
Netherlands	105
Newfoundland	51
England	277
Peru	77
Sweden	70
Trinidad	141
British Guiana	348
Australia	5
New Zealand	111
Argentine Republic	340
Uruguay	325

PRINTING PAPER.

England	$16,264
Jamaica	355
Chile	18,232
Ecuador	1,378
Peru	6,212
Cuba	29,927
Brazil	41,003
British West Indies	1,683
Venezuela	384
Spain	1,457
Mexico	43,000
Australia	28,791
New Zealand	4,042
British South Africa	7,938
Barbados	189
Colombia	1,942
Central America	1,069
Argentine Republic	47,394
Uruguay	1,002
Canada	50

WRAPPING PAPER.

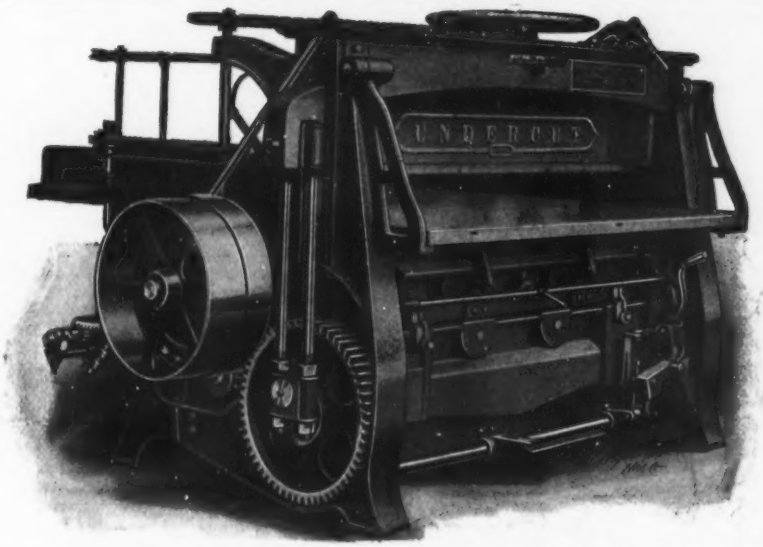
Italy	$853
England	5,173
Cuba	9,785
Haiti	233
Brazil	1,846
Colombia	1,693
Ecuador	53
Mexico	4,161
Newfoundland	65
Barbados	1,618
Switzerland	$74
Central America	369
Chile	533
Jamaica	81
British West Indies	3,871
Danish West Indies	6
French West Indies	20
San Domingo	381
British Guiana	240
Dutch Guiana	12
Japan	623
Australia	8,058
New Zealand	823
Peru	76
Venezuela	1,830
British South Africa	565

WRITING PAPER.

France	$13,231
England	4,151
Bermuda	10
Central America	1,796
Jamaica	528
Cuba	4,151
Haiti	217
San Domingo	6
Bolivia	266
Brazil	7,037
Chile	1,590
Colombia	456
Peru	1,656
Venezuela	586
Morocco	100
Netherlands	627
Denmark	499
Norway	200
Portugal	11
Spain	75
Argentine Republic	6,494
Canada	86
Mexico	692
Newfoundland	157
Barbados	25
British West Indies	328
Danish West Indies	14
San Domingo	109
Ecuador	1,812
British Guiana	11
Dutch Guiana	51
Dutch East Indies	166
Japan	21
Russia in Asia	20
Australia	4,273
New Zealand	769
Belgium Kongo	3
China	6
British West Africa	68
Uruguay	77
British South Africa	1,516

PAPER.

France	$5,303
Italy	3
England	6,471
Central America	2,781
Jamaica	722
British Dutch Indies	915
Cuba	7,727
Danish West Indies	96
Dutch West Indies	134
Haiti	199
San Domingo	282
Brazil	25,299
Colombia	4,481
Peru	247
Portugal	207
Spain	21
Argentine Republic	14,497
Bolivia	84
Venezuela	1,165
Netherlands	152
Russia in Europe	572
Mexico	872
Barbados	479
French West Indies	259
Chile	2,136
Ecuador	58
British Guiana	2,083
Dutch Guiana	24
Dutch East Indies	190
Japan	1,408
Australia	25,160
New Zealand	3,034
Denmark	6,150
China	173
Uruguay	140
British South Africa	1,025
British East Africa	19



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The Paper Mill Cutter, combining the highest degree of accuracy, speed and simplicity for the most exact trimming.

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BALES

How to stack them! You can do it easily and efficiently by using

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N. Y. Revolving Portable Elevator Co.

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Miscellaneous Markets

OFFICE OF THE PAPER TRADE JOURNAL,
WEDNESDAY, September 27, 1916.

ALUM.—The alum market has registered no change during the week. Prices are firm for spot lots. Chrome alum is generally quoted at 30c. per pound, but contracts can be made at 25@26c. per pound. Dealers quote 4@4¼c. for ammonia varieties and 6@6¼c. for potash alum.

BLANC FIXE.—The supply of this product continues limited. The demand remains keen and prices are soaring. The shortage of raw materials is tending to keep the market firm. Quotations for pulp blanc fixe are 95c.@$1.00 per ton New York and for the dry product $1.25@1.35 New York.

BLEACHING POWDER.—It is reported that sales of "spot" in large domestic containers have been made at 4@4½c. per pound during the week. Resale offerings for domestic use are few, but the scarity of small containers is making the price quoted for export use 5½@6c. The contract price for May delivery is now 2½c. per pound f. o. b. works.

BRIMSTONE.—No change in the strong position of this market has taken place during the week. There is an active demand present, but high freight rates are keeping the market firm at $35 per long ton on spot and $30 per long ton New York for later shipment. Baltimore quotations are 50c. higher than those.

CASEIN.—The demand for large shipments remains dormant, but spot lots are readily absorbed at 17@24c. per pound. The demand for contracts is quiet, and quotations are now ranging between 14@15c per pound.

CAUSTIC SODA.—There has been a falling off in the amount of resale offerings, and dealers state that spot business has not been so active during the week. Dealers are now quoting 3¾@4c per pound for 76 per cent. Flat contracts for next year have been placed at 2¼c. per pound, basis 60 per cent. f. o. b. works.

CHINA CLAY.—Foreign grades are in excellent demand, but arrivals are for the most part on contract, and pass directly into consumers' hands. Primary markets hold firm, and this prevents a reduction in price at delivery points. Quotations for English China clay are on a basis of $23@42 per ton, and bolted clay at $15@32. Domestic grades are firm but quiet, and quotations range between $12@15 per ton.

ROSINS.—There have been moderate price shadings at Savannah, but no effect has yet been registered in the New York market. The demand at the moment is dormant, but a fair miscellaneous inquiry prevails. Final prices in the local market are quoted as follows ex yard: Grade E, $6.35@—; Grade F, $6.60—; Grade G, $6.70@—.

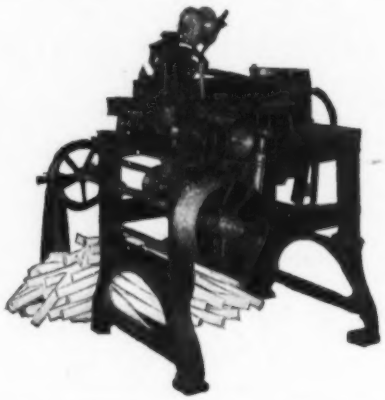
STARCH.—The following quotations were current during the past week: Pearl starch, $2.65, in bags, $2.79 in barrels; powdered starch, $2.70 in bags, $2.79 in barrels; special warp sizing starch, $2.75 in bags; finishing starch, $3.05 in bags; Crystal T. B. starch, No. 90 fluidity, $3.35 in bags, $3.48 in barrels. The above quotations are per 100 pounds for carload quantities, freight prepaid to New York City.

SODA ASH.—Some dealers have refused to transact business for 58 per cent. light at less than 3¼c. per pound. It is reported, however, that 3c. per pound is the more common quotation. Production is heavily sold ahead for next year, and some makers can book no further business. The market is firm and prices have not yet touched the high point. Shipments over next year are held at 1½c. for light basis 48 per cent. f. o. b. works. Dense is quoted at 1½c. per pound basis 48 per cent. for next year shipments f. o b. works.

SATIN WHITE—No change is reported in the firm position of this market. The demand is still keen and no additions to the available amount of spot have been evidenced during the week. Quotations range between $2.45@2.75 per 100 pounds delivered.

Dietz New Automatic Towel Tube Machine

The Dietz Machine Works, 126-128 West Fontaine street, Philadelphia, Pa., the well-known manufacturers of high-grade toilet and paper towel perforating, slitting and rewinding machines, are placing on the market their latest machine for making direct from rolls of chipboard wire-stitched towel tubes for use in paper towel rolls. These tubes are made at the rate of 30 a minute, and the machine works very smoothly and quietly, with practically no waste outside of the small portion died out by machine for form required in making the tube. The machine is strongly built of the best workmanship and materials throughout, and as bearings are bronze-bushed,



NEW AUTOMATIC TOWEL TUBE MACHINE.

the machine with reasonable care should last a life-time. This is also true of the automatic tube machines for making toilet paper tubes, of which the Dietz machine builds two styles, one for making the tubes from rolls of stock complete and the other for making the toilet paper cores from sheets of stock cut to exact size required for the tube. The tubes for toilet rolls are made at the rate of 60 per minute on both machines, and patent is held on all the automatic tube machines built by the Dietz Machine Works. Interested parties will therefore do well to take up the matter with the Dietz Machine Works for further information.

TORONTO QUOTATIONS

Paper

Bond	11	@	26
Ledgers	16	@	18
Writing—			
Extra Superfine	25	@	—
Superfine	24	@	—
Tub sized	11	@	16
Engine sized	11	@	—
News, f. o. b. Mill—			
Rolls, contract	2.35	@	2.45
Rolls, transient	3.50	@	4.00
Sheets	2.75	@	—
Book—			
S. & S. C.	12	@	16
M. F.	9	@	—
Coated & En.	11	@	14
Litho.	10	@	14
Tissues—			
White, No. 1	1.60	@	—
White, No. 2	1.10	@	—
Manila, No. 1	1.30	@	—
Kraft	1.00	@	—
Colored	1.50	@	—
M. G. Sulphite	1.30	@	—
Nat. White	85	@	—

Old Waste Papers

F. O. B. Toronto.

Shavings—			
Hard White, No. 1	4.00	@	4.15
Hard White, No. 2	3.75	@	4.00
Soft White, No. 1	3.65	@	3.75
Colored, No. 2	90	@	1.20
Flat Stocks—			
Stitchless	1.75	@	1.85
St., Mag. and Solid Flat Bk.	1.50	@	—
Solid Book Ledger	2.15	@	—
Manilas—			
New Enc. Cut	2.00	@	2.10
No. 1 old	1.35	@	1.40
Old Krafts	3.00	@	3.25
News—			
Strictly Overissue	85	@	90
Strictly Folded	80	@	—
Broken	75	@	—
No. 1 Mixed Paper	70	@	—

Chemical Pulp

F. O. B. Toronto.

Sulphite—			
No. 1 Bleached	8.50	@	9.50
No. 2 Bleached	—	@	—
Easy Bleaching	6.00	@	6.50
No. 1 Unbleached	5.00	@	5.50
No. 2 Unbleached	—	@	—
Kraft Pulp	5.40	@	5.75
Bleached Sulphate	—	@	—
No. 1 Unbleached	—	@	—
No. 2 Unbleached	—	@	—
DOMESTIC (F. o. b. Pulp Mill).			
Sulphite—			
Bleached	6.75	@	7.00
Unbleached	4.00	@	5.00
Soda, Bleached	5.00	@	5.50
Easy Bleaching	5.75	@	6.00

The Mathieson Alkali Works

SALTVILLE, VA.

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"EAGLE-THISTLE" BRAND

BLEACHING POWDER

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60 per cent., 70 per cent., 72 per cent., 74 per cent., 76 per cent.; also 78 per cent. Our 78 per cent. Caustic Soda is an article of greater purity than has ever before been produced in a commercial way, analyzing 99.70 Hydrate of Soda

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CHARLOTTE, N. C.

New York Market Review

OFFICE OF THE PAPER TRADE JOURNAL,
WEDNESDAY, September 27, 1916.

Paper

The paper situation has registered no change during the week. The mills continue to operate at capacity in an effort to fill the orders which are already on their books. No signs of catching up with the demand are evident. Jobbers are even more anxious to place orders now than they were during the summer months. The autumn demand for paper is being felt on all sides and prices are registering their usual advance under this strained condition. Jobbers and manufacturers are now feeling the full force of the extraordinary demand and as a result bidding to place orders is becoming a common practice in the trade. Despite this fact, old customers are being taken care of in so far as possible. Many concerns refuse to accept orders from those with whom they have had no previous dealings and shipments are being made in some cases on a percentage basis of the amount of paper used in the corresponding month of last year. The sales departments of the mills are experiencing their main difficulty in distributing the supply so as to satisfy as many of their old friends as possible. No one expects to get the amount of paper that he could sell, and accordingly the main object of mill agents is to keep old customers feeling that they are getting just as good treatment at the hands of the mill as their competitor. The manufacturers that are not entirely sold up are booking only those orders that involve the minimum of trouble to fill. It is difficult to place orders which call for light weight paper or which involve a guarantee as to texture, quality, or special ream fold. Orders which contain the fewest specifications of this sort are receiving preference.

The newsprint market shows no change. More news is being produced than ever before but the demand so far exceeds the supply that prices continue to soar. It is reported that a strike in a middle west news mill has resulted in taking 250 tons of news per week off the market. This fact will cause an additional scarcity in this market, for surplus stocks of most of the mills are now down to rock bottom. It hardly seems possible that any other mill will be willing or able to supply the regular contract customers of this company. If this is the case, these customers will be forced to go out and buy in the open market and accordingly one more increment will be added to the already exorbitant demand. No hope can be held out for lower newsprint for many months and possibly for several years to come. Many things must be straightened out before prices will return to anything like their old level. The production of American mills must not only equal the domestic demand but it must so far exceed it as to be able to fill the demand made upon it by the export trade which is receiving little attention at the present time. After these demands are satisfactorily taken care of then the reserve stocks of the mills must be adequately replenished before a return to a buyers' market will be effected. How much time it will take to do these things is a question that no one is in a position to answer.

Low grade bonds and ledgers are scarce and prices are rising each week. Most of these mills are sold up far in advance and no hope of a fall in price can be expected for some time to come. The same strained condition is evident in the book market. These mills do not want to make grades of book less than 70 pounds in weight. The wrapping market is in a deplorable condition. Very few mills are able to book orders for shipment before the first of the year. Many grades of inferior quality are being turned out as a result of the scarcity of raw materials which are used in their product. There is a great export demand which will absorb any stray lots of good wrapping which may be placed on the market. The board market is well sold up and reports show that a good grade of tag board was sold during the week at $130 per ton. News board continues to be quoted at $60 and upward, and straw board is now quoted at $52.50 a ton.

Sulphite Fibres

No fall in the price of this product is to be expected for some time to come. There is an extraordinary demand present and shipments from abroad other than those that are on contract are very few. Many paper mills are substituting inferior pulps for this product because of its present scarcity and price. All the American and Canadian mills are working to capacity and despite the shortage of the Scandinavian product, more pulp is now being produced and consumed in the domestic market than ever before. The demand, on the other hand, has so far increased that even this increase in supply is insufficient to fill it. The present scarcity therefore is due to the extraordinary demand rather than the decreased supply. It does not seem probable that any large increase in price will occur within the next few weeks but it is certain that no decline is to be hoped for over a much longer period. Imported bleached is quote dat 8¼@9¼c. per pound, and the same domestic product is bringing 6¼@7c. per pound.

Sulphate

No change has taken place in this market. The mills are working to capacity but most of their production is being consumed in their own plants. Those mills which do not consume all their product have, for the most part, already contracted for their surplus supply and as a result spot lots are sparsely available. The prices paid for sulphate are now purely nominal. The kraft pulp market is in only a slightly better condition. The demand far exceeds the supply and prices now range between $110@115 per ton.

Ground Wood

Prices continue to soar in this market. Sales at $28 per ton f. o. b. mill are reported to have been placed in New York during the week. Middle-west quotations are reported to exceed this mark by $5 to $8 per ton. The supply at present is limited owing to the scarcity of rain in certain sections of the country, and also owing to the increased demand both for the bleached and unbleached product. Bleached ground wood is being used more and more by book paper manufacturers as the supply of sulphite fibre decreases. This fact has added one more field for this product and as a result less and less of this pulp is available for sale.

Rags

The rag market continues firm, but dormant. Dealers continue to hold on to their goods in the expectation of a better market in the near future. There is a relative scarcity of the imported product at this time which will make itself felt as soon as the demand briskens up. The bagging and rope market is in exactly the same situation as the imported rag field. No large business has been effected in either market, but reports show that roofing stocks continue to move together with washables and fancies. No change in quotations is evident.

Old Papers

This market is moving well. Prices continue to hold firm and there is a good inquiry for all grades of hard papers. Ledgers have been active during the week and quotations for solid book now range between 2.25@2.50c. per pound. Ledger stock varies between 1.90@2.15c. f. o. b. New York. No. 1 hard white shavings maintain a good inquiry and prices range between 4.00@4.25c. per pound. No. 1 white news is moving well at 1.50@1.65c. per pound.

Market Quotations

NEW YORK

Trade Securities

Bid and asked quotations of securities listed on the Stock Exchange of companies interested in the manufacture of paper as reported September 26, follows:

	Bid.	Asked.
American Writing Paper Company, pref.	33¼	34
American Writing Paper Company, 5s	82	82½
American Writing Paper Company, com.	4	4½
International Paper Company, pref.	94½	95
International Paper Company, com.	29⅞	30
International Paper Company, 6s	102	102¼
International 5s	95⅜	95½
Union Bag and Paper Company, pref.	55	56½
Union Bag and Paper Company	9⅜	9¾
Union Bag and Paper Company, 5s	90½	90⅞
United Paper Board Company, pref.	54⅞	55
United Paper Board Company, com.	5	5¼

Paper

Bond	12	@	—
Ledgers	13	@	—
Writing—			
Extra Superfine	21	@	—
Superfine	19	@	—
Tub Sized	13	@	—
Engine Sized	11	@	—
News, f. o. b. Mill—			
Rolls, contract	2¾	@	3½
Rolls, transient	4	@	5¼
Sheets, f.o.b. N.Y.	—	@	—
Side runs	—	@	—
Book—			
S. & S. C.	8	@	—
M. F.	7¾	@	—
Coated and Enamel	9	@	—
Lithograph	9	@	—
Tissues—F. o. b. N. Y.—			
White, No. 1	1.00	@	—
White, No. 2	1.00	@	—
Manila, No. 1	1.20	@	—
Kraft	1.00	@	—
Colored	—	@	—
Kraft—F. o. b. N. Y.—			
No. 1 Domestic	8¾	@	—
No. 2 Domestic	7½	@	—
Imported	10	@	—
Label	6¾	@	—
Screenings	4	@	—
Manila—			
No. 1 Jute	10	@	—
No. 2 Jute	—	@	—
No. 1 Wood	6	@	—
No. 2 Wood	4¼	@	—
Butchers'	3¾	@	—
No. 1 Fibre Papers	5¼	@	—
No. 2 Fibre Papers	4¼	@	—
Card Middles	4	@	—
Common Bogus	3¼	@	—
Boards, per ton, delivered—			
News	60.00	@	—
Straw	50.00	@	—
Chip	52.50	@	—
Binders' Tar Bd.	85.00	@	115.00
Straw Col'd Chip.	52.50	@	—
Manila Lined C'p	65.00	@	—
Jute Container	60.65	@	—
Wood Pulp	55.00	@	—
Tag Board	1.20	@	—

Mechanical Pulp

(F. O. B. Pulp Mill.)

No. 1 f. o. b. Mill	25.00	@	28.00
No. 2 f. o. b. Mill	—	@	—

Chemical Pulp

(Ex-Dock New York.)

Sulphite—			
No. 1 Bleached	8.75	@	9.50
No. 2 Bleached	—	@	—
Easy Bleaching	6.00	@	6.50
No. 1 Unbleached	5.00	@	5.50
No. 2 Unbleached	—	@	—
Kraft Pulp	5.50	@	5.75
Bleached Sulphate	—	@	—
No. 1 Unbleached	—	@	—
No. 2 Unbleached	—	@	—
Domestic (F. o. b. Pulp Mill).			
Sulphite—			
Bleached	6.75	@	7.00
Unbleached	4.00	@	—
Soda, Bleached	5.00	@	5.50

Domestic Rags

Shirt Cuttings—			
New White, No. 1	8¾	@	9¼
New White, No. 2	6¾	@	7½
Silesias, No. 1	6¾	@	7½
Washables	6	@	6¾
Fancy	6½	@	6¾
Cottons—			
New Blue	5¾	@	6½
New Black Soft	4	@	—
New Light Sec'ds	4	@	5
New Black Mixed	—	@	—
Whites, No. 1	6¼	@	—
House Sl'd Whites.	4¾	@	4¾
St. Soiled Whites.	3½	@	4
Thirds and Blues.	3¾	@	4
Black Stockings	3½	@	4
Stripping Cloths	2.25	@	2.35
Roofing Stock—			
No. 1	2½	@	2¾
No. 2	2.10	@	2¼
No. 3	2	@	2¼
No. 4	2	@	2¼
No. 5A	2.20	@	2⅜
B.	.90	@	1.00
C.	.75	@	.80

Foreign Rags

New White Cuttings	nominal
Unbleached Cottons	nominal
Light Flannelettes	nominal
New Light Silesias	nominal
New Light Oxfords	nominal
New Light Prints	nominal
New Mixed Cuttings	nominal
New Dark Cuttings	nominal
No. 1 White Linens	nominal
No. 2 White Linens	nominal
No. 3 White Linens	nominal
No. 4 White Linens	nominal
Old Ex. Light Prints	nominal
Ord. Light Prints	nominal
Medium Light Prints	nominal
Dutch Blue Cottons	nominal
Ger. Blue Cottons	nominal
German Blue Linens	nominal
Checks and Blues	nominal
Dark Cottons	2½ @ 2¾
Shoppery	nominal

Bagging

Gunny No. 1—			
Domestic	3¼	@	3¾
Foreign	3¼	@	—
Bright Bagging	2¾	@	—
Sound Bagging	2½	@	—
Mixed Bagging	2¼	@	—
No. 2 Mixed	2¼	@	—
Wool Tares, light	3½	@	—
Wool Tares, heavy	3¼	@	—
Manila Rope—			
Foreign	4½	@	5
Domestic	4¾	@	—
New Bur. Scrap Cut.	3¾	@	3¼
Hessian Jute Threads	4½	@	4¾

Twines

India, 8 & 9 basis—			
Dark	13	@	—
Light	13	@	—
B. C., 48-60	28	@	—
A. B., Italian 48-60	35	@	—
Finished Jute—			
Dark, 48-60	14½	@	—
Light, 48-60	18	@	—
Jute Wrapping, 2-6 ply—			
No. 1	17	@	—
No. 2	16	@	—
Paper Makers' Twine	13	@	—
Box Twine, 2-4 ply.	13	@	—
Jute Rope	11	@	—
Amer. Hemp, 4½ and 6	22	@	—
Sisal Hay	12¼	@	—
Sisal Lath Yarns	12¼	@	—

Old Waste Papers

(F. O. B. New York.)

Shavings—			
Hard White, No. 1	4.00	@	4.25
Hard White, No. 2	3.50	@	3.75
Soft White, No. 1	3.50	@	3.75
Colored, No. 1	1.20	@	1.30
Colored, No. 2	.90	@	1.00
Flat Stock—			
Stitchless	1.70	@	1.80
Straight Magazine	1.60	@	1.70
Solid Flat Book	1.70	@	1.75
Crumpled, No. 1.	1.30	@	1.40
Solid Book Ledger.	2.35	@	2.50
Ledger Stock	2.00	@	2.25
No. 1 White News.	1.45	@	1.65
New B. B. Chips	50	@	—
Manilas—			
New Env. Cut	2.25	@	2.40
New Cut, No. 1.	1.65	@	1.75
No. 1 Old	1.40	@	1.50
No. 2 Old	.70	@	.75
Bogus Wrappers	.70	@	.80
Old Krafts	2.75	@	3.00
News—			
Strictly Overissue	.95	@	—
Strictly Folded	.85	@	—
Broken	.65	@	—
No. 1 Mixed Paper.	.60	@	.65
Common Paper	.40	@	.45

CHICAGO

[From our regular correspondent.]

Paper

Bonds	6½	@	—
Ledgers	7	@	—
Writing—			
Superfine	14	@	—
Extra Fine	11	@	—
Fine	7¾	@	—
Fine No. 2	7	@	—
Book, S. & S. C.	7	@	—
Book, M. F. S.	6½	@	—
Book, Coated	8½	@	—
Label	8½	@	—
News	2.35	@	—
Manila—			
No. 1 Manila	3¾	@	—
No. 1 Fibre	3.00	@	—
No. 1 Jute	6	@	—
Sulphite, No. 1	4	@	—
Common Bogus	2¾	@	—
Straw Board (ton).	42.00	@	—
News Board (ton).	47.00	@	—
Wood Pulp Board.	50.00	@	—

Old Papers

Shavings—			
No. 1 Hard White	3¾	@	—
No. 1 Soft White	3.15	@	3.25
No. 2 Soft White	2.80	@	—
No. 1 Mixed	1¾	@	—
No. 2 Mixed	1½	@	—
Ledgers & Writings	2½	@	2.35
Solid Books	2¾	@	—
Blanks	2	@	—
No. 2 Books, light.	90	@	—
Extra No. 1 Manila.	1.50	@	1.60
No. 1 Manilas	1.20	@	1.30
Folded News (overissue)	80	@	90
Old Newspapers	65	@	75
Mixed Papers	65	@	70
Straw Clippings	65	@	70
Binders' Clippings	65	@	70

PHILADELPHIA

[From our regular correspondent.]

Paper

Bonds	9	@	—
Ledgers	9¼	@	—
Writing—			
Superfine	18	@	—
Extra Fine	17¼	@	—
Fine	14¼	@	—
Fine, No. 2	12¾	@	—
Fine, No. 3	9½	@	—
Book, S. & S.	7	@	—
Book, M. F.	6¾	@	—
Book, Coated	—	@	—
Coated Lithograph	7½	@	9
Label	6½	@	8
News	3.00	@	—
No. 1 Jute Manila.	10	@	—
Manila Sulph., No. 1	4	@	5
Manila No. 2	3.75	@	4.25
Common Bogus	1.85	@	2.00
Straw Board (ton).	48	@	52
News Board (ton).	55	@	60
Chip Board	45	@	52
Wood Pulp Board.	—	@	—

(Carload Lots.)

Tarred Felts—			
Regular	62	@	66
Slaters'	65	@	68
Best Tarred, 2-ply	70	@	75
Best Tarred, 3-ply	97	@	1.10

Bagging

Gunny No. 1—			
Foreign	3.00	@	—
Domestic	3.00	@	—
Scrap Burlap Bagging	3.00	@	—
No. 1 Scrap	2.75	@	3.00
Wool Tares, heavy.	3.75	@	—
Wool Tares, light.	4.00	@	—
Manila Rope, No. 1	4.75	@	—
Mixed Rope	2.75	@	—
No. 1 New Lt. Burlap	6.00	@	7.00
New Burlap Cuttings	3.75	@	4.00

Old Papers

Shavings—			
No. 1 Hard White	4.25	@	—
No. 2 Hard White	3.40	@	—
No. 1 Soft White	3.75	@	—
No. 2 Soft White	1.30	@	1.50
No. 1 Mixed	1.30	@	1.40
No. 2 Mixed	90	@	1.00
Solid Ledger Stock.	2.50	@	—
Writing Paper	2.20	@	2.30
No. 1 Books, heavy.	1.80	@	2.00
No. 2 Books, light.	1.40	@	1.50
No. 1 New Manila.	2.00	@	2.10
No. 1 Old Manila	1.50	@	1.60
Old Kraft	2.65	@	—
Overissue News	90	@	1.00
Old Newspaper	70	@	75
No. 1 Mixed Paper.	70	@	75
Common Paper	55	@	65
Straw Board Clip.	70	@	75
Binders' Bd. Clip.	70	@	75

BOSTON

[From our regular correspondent.]

Paper

Bonds	10	@	—
Ledgers	9¼	@	—
Writing—			
Superfine	15	@	—
Fine	11	@	—
Fine, No. 2	8½	@	—
Book, S. & S. C.	8½	@	—
Book, M. F.	8	@	—
Book, Coated	9	@	—
Label	9	@	—
News, Sheets	—	@	—
News, Rolls	—	@	—
Manila—			
No. 1 Manila	5.50	@	—
No. 1 Fibre	5.25	@	—
No. 1 Jute	.10	@	—
Sulphite, No. 1	6½	@	—
Common Bogus	2.50	@	—
Chip Board (ton)	—	@	—
Straw Board (ton)	—	@	—
News Board (ton)	—	@	—
Wood Pulp Board	—	@	—

Old Papers

Shavings—			
No. 1 Hard White	3.50	@	3.75
No. 1 Soft White	4.00	@	4.25
No. 1 Mixed	1.50	@	1.75
Ledger & Writings	2.25	@	2.50
Solid Books	1.60	@	1.70
Blanks	1.75	@	2.00
No. 2 Books, light.	1.25	@	1.75
Extra No. 1 Manila	1.60	@	1.70
No. 1 Manilas	1.40	@	1.50
Folded News (overissues)	80	@	90
Old Newspapers	65	@	75
Mixed Papers	60	@	70

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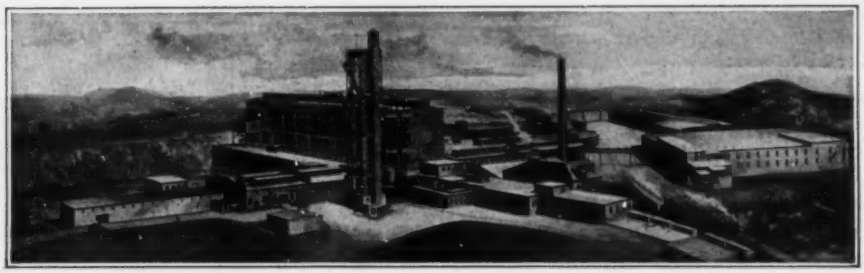

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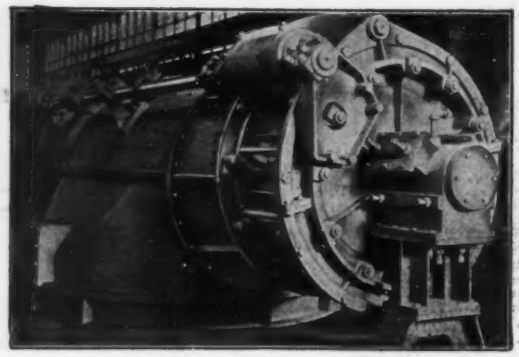

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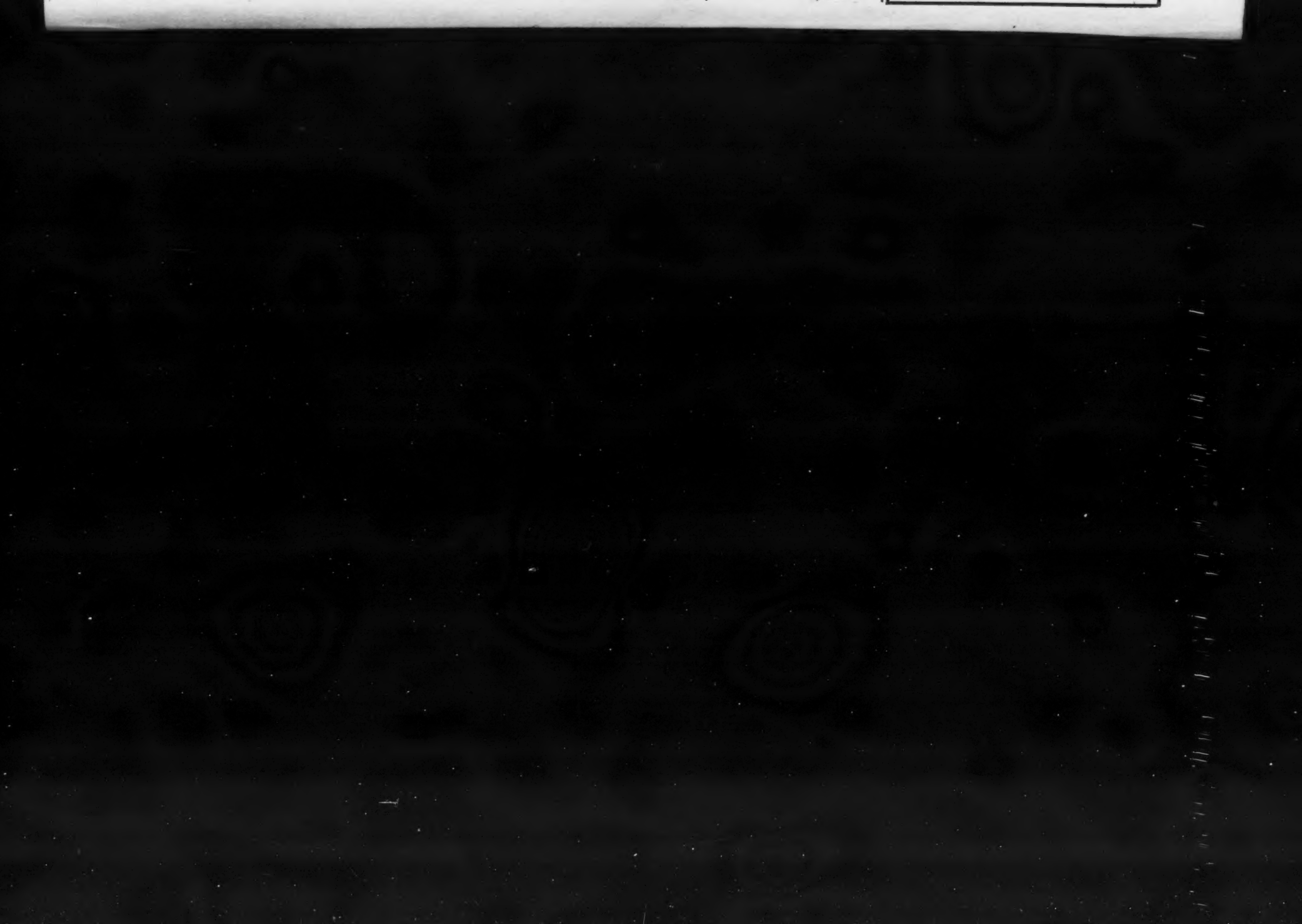

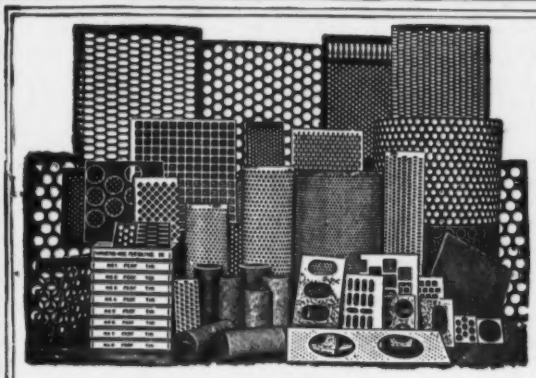

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